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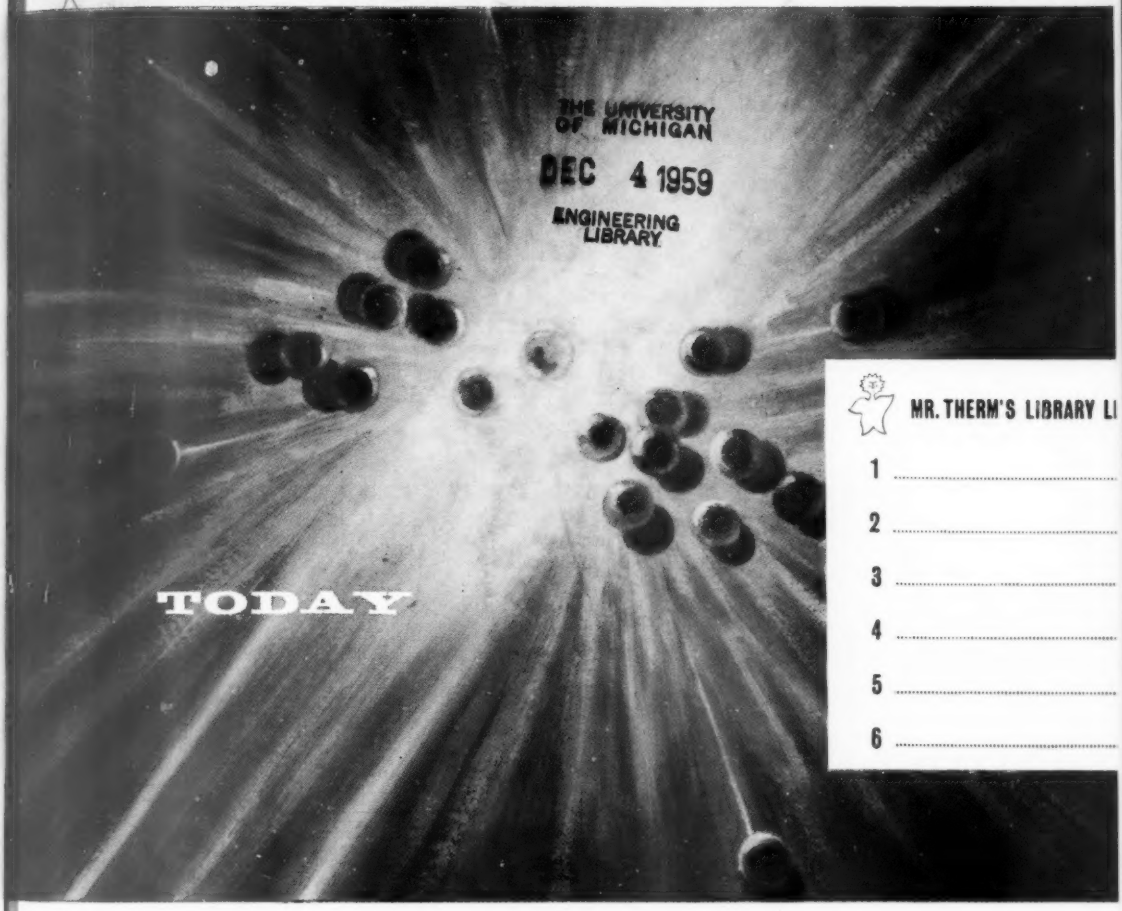

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PRINCIPAL CONTENTS

PAGE

Madrid Congress

Comments on the proceedings at the International Foundry Congress held in Madrid last month. Technical sessions, social events and works visits are described 445

Construction and Use of an Oil-fired Reverberatory Furnace for Melting Aluminium

Account of problems encountered, and tests made, by Kent Alloys, Limited, when they decided to instal a reverberatory furnace for aluminium 453

Congrès de la Fonderie à Madrid.
Commentaires sur le procès-verbal du Congrès International de la Fonderie, tenu le mois dernier à Madrid. Les sessions techniques, les évènements sociaux et les visites d'usines sont décrits. 445

Construction et Usage d'un Four à Réverbère chauffé à Huille pour la Fusion de l'Aluminium.
Compte-rendu des problèmes qui se sont présentés, et des essays qui ont été effectués par Kent Alloys Limited, quand il fut décidé d'installer un four à réverbère pour les alliages d'aluminium 453

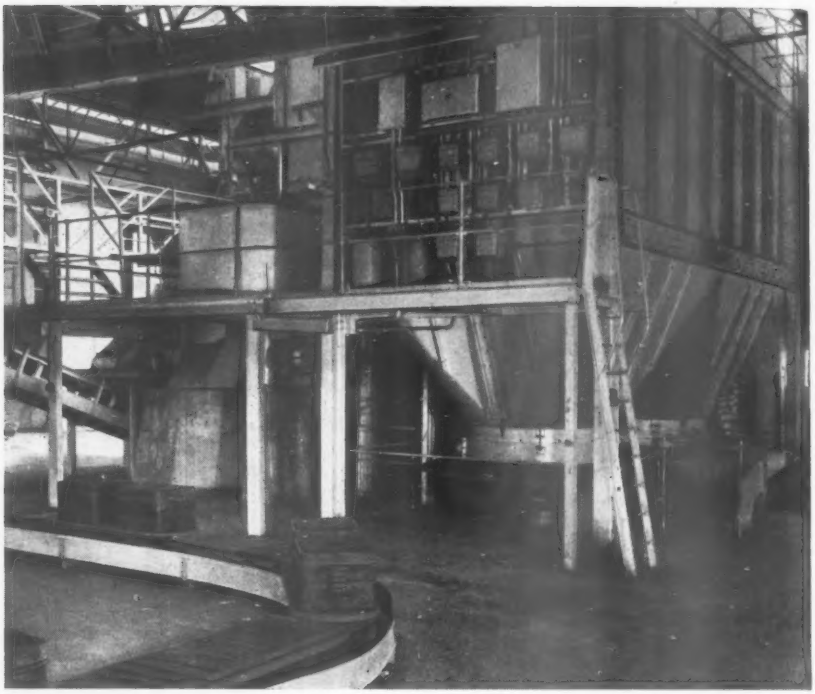
Der Giessereikongress in Madrid.
Randbemerkungen über die Verhandlungen auf dem im letzten Monat in Madrid abgebaltenen Internationalen Giessereikongress. Es werden die technischen Sitzungen, die gesellschaftlichen Veranstaltungen und die Werksbesuche beschrieben. 445

Konstruktion und Verwendung eines ölgefeuerten Flammschmelzofens für Aluminium.
Ein Bericht über die Probleme, die sich für die Kent Alloys, Limited, ergaben, und die durchgeführten Versuche, nachdem sie sich entschlossen hatten, einen ölgefeuerten Flammofen für das Schmelzen von Aluminium zu errichten 453

Features, News, Commercial Information and Statistics

Leader: Coal and the Future 443
Dinner: British Bronze and Brass Ingot Manufacturers' Association .. 444
Forthcoming Events 444
Equipment and Supplies 452
IBF National Works Visits Day in Pictures 457
New Works for H. C. Hopper (Norwich), Limited 459
Personal 460
British and World Shipbuilding 461
Notes from the Branches 464
Building Exhibition 464
News in Brief 465
Long-service Record 467
Company News 468
Raw Material Markets 470
Current Prices of Iron, Steel and Non-ferrous Metals 472
ISI Translations 474

SAND PREPARATION PLANT



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FOUNDRY
TRADE JOURNAL
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Coal and the Future

Coal and its main derivative, coke, will, for many years to come, be an essential raw material for the foundry industry, despite the fact that, on the Continent of Europe, thoughts are being expressed in terms of energy, no matter what its source. In this new conception, two cardinal factors in European economy are the Lacq natural-gas fields and the availability of oil fuel from the Sahara, because these will further reduce the demand for pit coal. The current position is that stocks in this country, Belgium and Germany, have reached unmanageable proportions and the closing down of uneconomic mines is proceeding at an increasing tempo. Obviously, this involves the cancellation of and (throughout Europe) the general reduction in, orders for mining machinery. What was to have been the best-equipped colliery in Europe is now being left in an unfinished state, and all this, naturally, has its repercussions on the foundry industry.

A solution of this problem—suggested by the German authorities—is to concentrate on the development of pits likely to produce 2½ tons per man shift at the pit bottom. With this type of production, then coal could be competitive with all other types of fuel and the profit margin would be such as to leave cash available for development work. The situation at the moment in Europe, we were informed at a Press conference by Mr. Coppée and Mr. Lapie (who hold high office in the European Coal and Steel Community) is that the present Common Market countries' production, now 240 million tons per year, is to be reduced by 40 million tons; some 27,000 miners, mostly Italians, have become redundant. From Community funds, these men (the Italians are under a five-year contract) are to receive on a graduated scale 80 per cent of their wages for the year following their dismissal. There are rehabilitation schemes to find work for the displaced miners, one being the siting of a large brewery and the second, a plastics factory in mining villages.

All this gives a preview of what will probably happen in this country, where the problem is of the same character but of somewhat less magnitude. Here from the suppliers' point of view, there is but the one big customer, which from a commercial standpoint is bad business. We do not believe that coal is on its way out, but for it to retain or increase its competitive position coalmining will have to be drastically rationalized.

Foundry Apprentice Award

As briefly announced in last week's issue of the JOURNAL, the prize (offered by the Worshipful Company of Founders) for the best apprentice at the National Foundry Craft Training Centre was presented for the first time this year. The illustration shows the award being made at the Joint Iron Council Banquet in London, on November 3, by Mr. Reginald Maudling, President of the Board of Trade. The winner of this £25 prize was Mr. Brian Cook (right), of Wolverhampton, a 20-year-old foundry apprentice at Bayliss, Jones and Bayliss, Limited, which firm he joined in 1955.

The National Foundry Craft Training Centre at West Bromwich was established by the foundry industry in 1948, to give periodical courses during their apprenticeships to boys and young men in all branches of founding; it is the only Centre of its kind in British industry. In the "best-apprentice" contest, Mr. Cook made four good castings and his methods showed thought and craftsmanship. His method of running the three-parted handwheel and boss casting was designed to obtain a clean and stress-free casting, although more moulding work was involved than in the method chosen by the runner-up. The winner's core-positioning for the heavily-cored gearbox casting was exact and, generally, the finish on his castings was excellent, as he had tooled out minor defects in the patterns.

Forthcoming Events

NOVEMBER 16

Institute of British Foundrymen

East Anglian section:—"Precision Castings," by J. S. Turnbull, 7.30 p.m., in the Lecture Hall, High Duty Alloys, Limited, Trading Estate, Slough, Bucks.

NOVEMBER 18

Institute of Welding

North London branch:—"Demonstration and Applications of Stud Welding," by R. W. Taylor, assembly at 54, Princes Gate, London, S.W.7, 7.30 p.m., for visit to the Imperial College of Science (opposite).

Institution of Production Engineers

Visit by Loughborough College students to Stewarts & Lloyds, Corby.

Wolverhampton graduate section:—"Modern Developments in Steel Casting," by F. Clymer, 7 p.m., at the Wolverhampton & Staffs College of Technology.

Peterborough branch:—"Art in Engineering," by John Barnes, 7.30 p.m., in the Conference Room, Peterscourt.

Glasgow branch:—"Tool Wear and Machinability," by Dr. E. M. Trent, 7.30 p.m., at the Institution of Engineers and Shipbuilders, 39, Elmbank Crescent.

Birmingham branch:—"Production of Motor Roads" (and film), by J. J. G. Michie, followed by "Materials Handling into and through the Factory." Special evening session by the Materials Handling group, 6.30 p.m., at the Midland Hotel, Birmingham.

Institute of British Foundrymen

North East Lancashire section:—"Work-study in the Foundry," by C. M. G. Wallwork, 7.30 p.m., at the Accrington College of Further Education, Sandy Lane, Accrington.

Southampton branch:—"Properties of Copper-base Alloy Castings," by F. Hudson, F.I.M., 7.30 p.m., at the Technical College, St. Mary's Street. (Joint meeting with the Southampton Metallurgical Society.)

London branch:—"Patternmaking in Plastics," by H. G. C. King, 7.30 p.m., at the Constitutional Club, Northumberland Avenue, W.C.2.

NOVEMBER 19

Institute of Vitreous Enamellers

Midland section:—"Wet Process Enamelling of Cast Iron," by E. R. Evans, 7.30 p.m., at the Birmingham Exchange and Engineering Centre.

Institution of Plant Engineers

Blackburn branch:—"Building a Modern Factory," by P. Wyatt, 7.30 p.m., in the Castle Hotel, Blackburn.

NOVEMBER 20

Institute of British Foundrymen

Bristol and West of England branch:—"Modern Sand Practice," by W. B. Parkes, 7.30 p.m., at the Royal Hotel, Bristol.

London branch:—Dinner/dance, 6.30 for 7 p.m., at the Café Royal, Regent Street, London, W.1.

Dinner

BRITISH BRONZE AND BRASS INGOT MANUFACTURERS ASSOCIATION

The annual dinner/dance/cabaret of the British Bronze and Brass Ingot Manufacturers Association was held at Grosvenor House, London, last Saturday. The president, Mr. James H. Barwell, J.P., was in the chair and with him at the high table were Mr. A. J. N. Brown (president of the Association of Bronze and Brass Founders); Mr. Leonard H. Cleaver, M.P., J.P., Dr. A. B. Everest, Mr. D. Carter (Board of Trade), and Mr. J. K. Lion (president, National Association of Non-Ferrous Scrap Metal Merchants), most of whom were accompanied by their ladies.

The toast to "The Guests," proposed by the chairman, was replied to by Mr. L. H. Cleaver who, now that he is a Member of Parliament, is no longer a partner in the firm of Heathcote and Coleman which acts as secretariat for the BBBIMA; Mr. F. W. Sims will now be acting for the secretaries of the Association. At the conclusion of the dinner, the guests danced to the music of Sydney Lipton's orchestra and were later entertained by Frank and Peggy Spencer and their dancing team, and Raphael and his model.

CONTRACTS WORTH OVER £50,000 have been placed with Taylor Woodrow (Arcon), Limited, of Welbeck Street, London, by Ransomes & Rapier, Limited, engineers, for the supply and erection of three steel-framed buildings at their Ipswich works. Of these buildings, one, 90-ft. high, will be a heavy fabrication shop for the manufacture of the largest type of excavator. It has been specially designed to house two 60-ton cranes.

Madrid Congress

Day-to-day Account of, and Comments upon, the Twenty-sixth International Foundry Congress in Spain (October 4 to 10)

This year, it fell to the lot of Spanish foundrymen to act as hosts for the twentysixth annual Congress of the International Committee of Foundry Technical Associations. The meetings were held in Madrid during the week commencing October 4, the whole proceedings being organized through the *Instituto del Hierro y del Acero* (Spanish Iron & Steel Institute, whose fourth annual general meeting ran concurrently). The Editor of the JOURNAL attended personally and what follows is his condensed report on the proceedings.

The 26th International Foundry Congress was held in Madrid from October 4 to 10. Concurrently with it, there was held the fourth annual general meeting of the *Instituto del Hierro y del Acero* (the Spanish Iron and Steel Institute)—a body covering technical associations and research activities of both iron and steel and foundry industry. The organizing committee was headed by His Excellency, Agustin Plana Sancho, with Mr. J. A. Andrés as secretary. The latter's help to the delegates was invaluable.

Registration

The office for the registration of some 1,300 delegates from 21 nations was opened at the *Delegación National de Sindicatos* on Sunday morning. It was here learnt that the lorry bringing some of the documents from the University City had broken down. However, splendid amenities had been provided and quite soon the enormous mass of papers was duly handed over. It contained, *inter alia*, the conference badge, a well-bound guide to Madrid for the ladies, notebook, and a neat folder for carrying one's documents. The inclusive registration fee paid gave everybody tickets for every event and thus, to avoid over-provision, it was necessary to check up for each specific item on the programme. Excellent provision was made for coping with the various languages. It was learnt that, owing to lack of support, the post-congress tour to the Barcelona area had been cancelled. The rest of Sunday and Monday was left free for sightseeing, though two international sub-committee meetings were held on the Monday afternoon.

It took the visitors from the North but little time to get used to having dinner (or should it be supper?) between 9 and 11 o'clock in the evening, despite the fact that the programme allowed but little time for the mid-day siesta.

The device in the heading comprises two motifs: the upper half representing the 26th International Foundry Congress, the lower section the fourth general meeting of the *Instituto del Hierro y del Acero* (Spanish Iron & Steel Institute).

Opening Ceremony

The opening ceremony was held on Tuesday morning in the great hall at the *Sindicato*, the seats being furnished with simultaneous translation telephones. The opening address was delivered by Dr. A. Dacco who, speaking in his capacity as president of the International Committee of Foundry Technical Associations, said he was both pleased and honoured to bring to Madrid the greetings of the 21 associations which to-day formed the Committee, as well as to express his thanks to the

View of the building in which all the main and sub-committee meetings of Congress week were held. Known as the "Sindicato," it is the usual venue in Madrid for both employer and employee meetings.

delegates for coming there from all parts of the world to participate and to add prestige to the 26th Congress. He thanked the *Instituto del Hierro y del Acero* for organizing the Madrid Congress, especially the directors and their colleagues.

He recalled an earlier Congress, held in Barcelona as long ago as 1928, and said that some of those in that earlier audience were present this year, for example, Mr. Plana, Mr. V. C. Faulkner and Dr. A. B. Everest, who had taken a prominent part in its activities, though at that time somewhat less prominent and much younger. At that time, they were imbued with faith in the development of new techniques and the need for international conferences for their wider dissemination, to facilitate the exchange of experience and to strengthen those personal contacts which had invariably proved themselves to be such a positive force for progress and for the well-being of the industry.

The Committee, founded by a few enthusiasts in 1927, soon enlisted Spain as a member country to join the original eight. It had grown with the development of new techniques and scientific discovery, and it was now realized that it was necessary for the world's technologists to acquaint themselves with foreign work and to impart to others the results of their researches and to do this unselfishly. The Committee would be truly international when it represented all the countries which had a developed foundry technique. At present, it included 21 national associations with a total membership of 45,700 members and a production estimated at 28,000,000 *tonnes* of iron castings and 2,100,000 *tonnes* of non-ferrous cast components. Other national associations should certainly join and make their contributions in order to enhance the value of the papers and discussions. They, too, could make valuable contributions to the work of the various technical committees, including the International Foundry Dictionary.

During his year of office, he had become convinced of the need to enlarge and adjust the functional structure of the Committee, from the secretariat to its committees. He felt sure that the delegates from the member associations would appreciate the problem and would solve it with both promptness and vision, and so align the work to keep step with the rhythm of modern life.

Recalling the work of the previous Congresses, spread over the last 34 years, a major factor had been its growth in importance, the incidence of mass-production, the improvement in working conditions. He made a plea for authors of papers to send them very early to the organizers in order that they could be translated and be in the hands of the delegates in good time. In this way they could be studied and intelligently discussed. He then underlined the benefits to be derived from visiting plants and informal discussions, as they could only lead to the increase of knowledge.

Before he closed, he expressed a desire to thank all those who had co-operated and were co-operating in the work of the Committee. These included the past-presidents, the chairmen of the various committees, the Institute of British Foundrymen, which body had from the inception of the organization provided without cost the secretariat, recalling in this connection the excellent work of the late Mr. Tom Makemson. He also thanked Mr. G. Lambert, the present honorary secretary, the convenors of the various sub-committees and to the authors of the papers. Stressing the value of personal international friendships, he concluded by saying that as the stay in Spain was now starting, the best wish he could make to everybody (including the hosts) was that foundrymen would be glad to have spent it there, because of the new ideas gained, because of the friendships cemented, and new ones made. The visitors would, he felt sure, leave Spain nostalgic, because of the wealth of natural beauty and culture there, her warmhearted kindly people, and the all too generous hospitality. To them he wished, in the name of the delegates, to extend his heartfelt good wishes for their future prosperity.

Address from the Congress President

The president of the Congress, His Excellency Agustin Plana Sancho, in his reply, said that to all participants in the 26th International Foundry Congress and the 4th meeting of the Spanish Iron and Steel Instituto, his first words were that of greeting—a really warm welcome to all those who had come from all quarters of the globe. This was the second congress to be held in Spain, the first being held in Barcelona, and was for the Spaniards an occasion of first importance. At the last congress, held in Brussels, the immediate past-president, Dr. G. Schwietzke, had given a really fine discourse on the theme, "The Foundry in the Service of Mankind." It was impossible to give a more exact or just definition of the object of the industry and the work of its employees. In truth, they were all engaged on working for the good of humanity. Here in Spain, it was not only the casting of iron and non-ferrous alloys that was under consideration, but as the past-president said, the betterment of humanity. It was often assumed that Spain was an ungovernable country, but he pointed out that if a married couple were quarrelling, it was unwise to interfere for immediately they would combine against the person interfering—that was Spain. The great need of the world was peace and after enlarging on this subject a little, he concluded that the object of this Congress should be "The Foundry in the Service of Mankind and of Peace."

He insisted that there in Madrid the nations of the world and the men of science were working for the perfecting of foundry practice, methods of working, and for the good of humanity. The *Instituto*, which included foundry activities, sincerely hoped that the work of the Congress would be fruitful. He thanked the delegates for attending in such large numbers. He told his audience how the *Instituto* came into existence a few years ago. Its first office occupied a storey in Villanueva Street; now they had their own well-equipped research laboratories and offices in the University City, where satisfactory progress was being made, catering as it did for all alloys. Whilst this was a co-operative effort, he was proud

(a) The British delegation, Mr. H. Hallett, Mr. C. H. Wilson and Mr. V. C. Faulkner, at the meeting of the International Committee of Foundry Technical Associations. (b) The president, Mr. A. Plana Sancho, and (left) Mr. Andrés Jimenez at the same meeting. (c) Mr. Andrés and the Spanish ballerina Carmen Amaga at one of the evening functions. (d) Dr. Dacco, of Italy, the president of the International Committee, addressing the assembly. (e) Mr. and Mrs. V. A. Rahbek, of Riba ironfoundry, Denmark, at one of the sessions.

of the part he had taken in its creation and development.

He thanked Dr. Dacco on behalf of the Congress and presented him with a gold Congress badge, as this metal represented the nobleness of the *Instituto* sentiments of friendship and was a recognition of his personal character. He then announced that the head of the State—General Franco—had accepted the position of honorary president of the Congress, and he expressed his appreciation of this high honour bestowed upon it.

He then welcomed the Minister of Commerce and asked him to address the audience. He gave some statistics of iron and steel production, saying the former had increased by 64 per cent. during the 1940-57 period—in 1958 963,000 tons had been produced. Steel during the same period increased by 75 per cent. and the 1959 production was 1,427,000 tons. The mining industry, for iron, copper, lead and zinc, had always been important, yet the reserves of iron were still enormous. Coal production was increasing, but the pits needed heavy capital expenditure for their modernization. The automobile industry was developing and a new aluminium industry had been created. Housing was a problem as there was still a shortage of raw materials, but good progress had been made.

At the conclusion of the ceremony, a film was shown, as Mr. G. Delbart's lecture was postponed until Friday.

Visit to Iron and Steel Institute Laboratories

At four o'clock, the whole of the delegates set out in a veritable caravan of motor coaches on a tour around the city of Madrid which terminated at University City, where the offices and laboratories

Madrid Congress

of the *Instituto del Hierro y del Acero* (Spanish Iron & Steel Institute) have recently been installed. The buildings are indeed imposing, whilst the offices are magnificently furnished. The laboratories are adequately, but not extravagantly, equipped, and are very well servicing the Spanish iron and steel industry. The accent at the moment is on the provision of standardized samples of material to the works chemical laboratories, in order to ensure reliable analyses of the iron, steel, etc., being manufactured, and on the basic principles of works management. These are very wise preliminary steps to take and will form a sound background for future progress. Good provision has been made for mechanical testing, for microscopic and heat-treatment studies, as well as work on refractory materials. It was intended to have a snack meal in the grounds, but as the weather was dull, an army of waiters invaded the building and in every office and laboratory an excellent meal was efficiently served. The day was rounded off by a gala entertainment at the Zarzuela Theatre, when the curtain rose about 11.15 p.m. on Carmen Amaya's delightful Spanish Ballet. For those who had never seen the touring shows of Spanish dancers at home, this was a refreshingly different entertainment and was highly appreciated by the huge audience.

Wednesday, October 7

Wednesday was devoted to technical sessions, special lectures, a visit to the Higher Council for Scientific Research, and (for the ladies) an excursion to Toledo. Not a few of the men decided to join the ladies, salving their consciences with the thought that another opportunity might never occur of seeing this marvellous city, its wonderful cathedral and glorious examples of some of the old masters. The writer was amongst the backsliders.

The evening was spent as the guests of the Lord Mayor of Madrid at a reception staged in the Cecilio Rodriguez Gardens—a part of the famous Retiro Park. This took the form of an *al fresco* orchestral entertainment by the City Band in idyllic surroundings. There was neither a formal reception nor speeches, but at the conclusion of the entertainment, excellent snacks and champagne were served.

Thursday, October 8

Nine o'clock, October 8, found this scribe at a meeting of the past-presidents of the International Committee of Foundry Technical Associations. In recent years, this has been a sort of executive committee which suggests the business for confirmation by the main body meeting at 3 o'clock in the afternoon.

International Committee Meeting

The meeting was presided over by Dr. Dacco, and after the usual formal business of apologies and minutes, he welcomed the new member from Hungary. Next, Russia was admitted to membership. The award of honour from the International Committee was accorded to Mr. Plana, the president of the Congress, who had been so prominent in international circles for nearly thirty years. It was announced that the trophies so generously given by Signor M. Olivo would cease after 1960, and that the large statue of Perseus would from thereafter find a resting place in the headquarters of the Committee.

Zurich Congress, 1960

Mr. G. L. Guyer then gave details of the next conference to be held in Switzerland next year from September 19 to 24.* Briefly, it is being organized jointly by the Association of Swiss Ironfounders and the Association of Swiss Metal Founders. On Monday, the opening ceremony at 11.30 a.m. will be followed by a cocktail party, and there are to be technical sessions during that afternoon (with simultaneous translation of the papers to be presented). The Tuesday of Congress week will be taken up with works visits, whilst the Wednesday will be devoted to technical sessions. At 6.30 p.m. on Wednesday there is to be a cocktail party and at 8.30 p.m. a banquet followed by a variety show. On Thursday, there is to be a trip on the Lake of Lucerne, whilst on Friday, there are to be more works visits and technical sessions. The official closing ceremony will take place on Saturday morning. Post-congress tours have been planned.

Resignation of Secretary

Mr. G. Lambert tendered his resignation as honorary secretary, and in recognition of his sterling work in that capacity,

* See JOURNAL, October 29.

Group of Congress delegates in committee: (left to right) Professor Ove Hoff (Denmark), Mr. Navarro Alcacer (Spain), Mr. S. C. Massari (USA) and Mr. Kalevi Raunto (Finland).

Part of the general assembly of delegates attending the Madrid Congress (there were over 1,300 registrations from all parts of the world).

he was presented with a silver cigarette box and the Insignia of the Congress. After Mr. Lambert had expressed his thanks, Dr. P. W. Muller of Zurich was elected secretary, his term of office starting on January 1 next year. In order to pay for the new secretariat, the subscription for next year was raised to $200 (about £70).

Election of Officers

Mr. F. W. E. Spies was elected president for the year 1960, and Mr. Plana, vice-president. The honorary treasurership is to be in the hands of Mr. M. Vuilleumier of Switzerland.

After a quantity of other business had been transacted, votes of thanks were passed to the hosts and to Dr. Dacco for the work he had put into the Committee during the past year. During the meeting, one delegate queried the policy of leaving so much to the past-presidents' committee.

Later that evening, the president of the Congress, Mr. Plana, entertained to dinner the official delegates at the Ritz Hotel. It was a well-groomed function, much enjoyed by the guests. There was only one speech, that by the chairman who, in the most gracious terms, proposed the health of the ladies. He finished by presenting the first bouquet to the lady on his right, the rest being rapidly distributed to the others.

Friday, October 9

Friday was a busy day for both the delegates and their wives. The former had technical sessions in the morning and a works visit to Empresa Nacional de Autocamiones, makers of small lorries. The latter had visits to a museum and a mannequin parade, whilst both attended the closing banquet and dance.

The closing banquet and dance was held at 10 p.m. in a hall of the medical faculty located in the University City, which is quite a long way from the centre of Madrid. Whilst there was something of a squash in the anterooms, immediately one entered the large hall, the organization was brilliant. It is not easy to serve meals to over 1,000 people, but never were so many fed in such a short space of time. Moreover, the banquet was of the highest standard and at its close, the ladies were presented with a Toledo-ware brooch and the men with a paper-knife taking the form of a Toledo sword.

Saturday, October 10

Technical sessions once again took up the morning, starting at 9 a.m. At 5 p.m., there was the closing ceremony. It was presided over by Mr. Plana and honoured by His Excellency the Minister of National Education, who represented the Head of the State. The first speech was by Dr. Dacco, whose Italian eloquence was so well suited to express the thanks of everybody to the hosts, the

Madrid Congress

organizers, to Mr. Andres, the indefatigable secretary and to Mr. Lambert. Nobody was forgotten and all received the praises and thanks they so well merited. Finally, he presented to Mr. Plana the statuette of Perseus, so kindly given for so many years by Commendatore Mario Olivo, who was called to the rostrum to add his tributes to the worth of the recipient. Mr. Plana, in reply, said he was particularly delighted to receive this award as it was a personal one and placed him amongst a list of illustrious foundrymen. He started his career at Altos Hornos di Vizcaya, where he became foundry manager. Here, following the lead of Senor Sans he was successful in turning out first-class rolls and ingot moulds. He paid a tribute to Mr. Jose Navarro Alcacer, who, as head of the foundry section of the Iron and Steel Institute, had done so much to forward the work of international co-operation.

In formally closing the Congress, he reviewed the work done by all sections. He cast his mind back to an international congress held in Liège in 1925, where he found himself being supported in his arguments by Professor Portevin. Then, in Barcelona in 1928, a congress was held under the presidency of Mr. Cesar Sorrano. He tried in conjunction with Senor Espana and Professor Portevin to popularize the Frémont test-piece as modified by the national gun-mounting shops. He hoped to see a revival of interest in the Frémont test. Finally, he thanked all those who had helped to make the Congress a success.

Works Visits

In Madrid, only one works was visited—that of the Empresa Nacional de Autocamiones, S.A. It operates a foundry which has been mechanized by Foundry Equipment, Limited, for making lorry castings. The company employs between 2,000 and 3,000 employees and *inter alia* is making 250 small tracks a month. However, this production is well capable of expansion with the existing plant, as added experience of quantity production is gained.

S.A. Vers-Malaga

Outside the gates of this large wagon building and repair shop is a gipsy encampment, located between the railway and the seashore. The natural bathing facilities readily available have made no impact whatsoever on the large nude and semi-nude juvenile population. The size of the works can be judged by the fact that each year they make 450 new wagons, and repair and modify a further 3,500. The foundry operates two 4-ton per hr. and a 16-cwt. per hr. cupola, and 50-cwt. electric furnace. The hearth of this furnace was at the time of the visit being fettled with wet dolomite—a feature never previously encountered. It was interesting to learn that this firm is making under licence, from Forni Tagliaferri, low-frequency induction furnaces.

Sociedad Espanola de Construccion Naval—Cadiz

This is a typical marine-engineering establishment, manufacturing ships and the usual range of engines and machinery associated with this industry. It is the San Carlo branch of a company with plants at Sestao, Bilbao, Reinosa (Santander) and Matagorda (Cadiz), the four works employing some 10,000 operators. It contains iron, steel and non-ferrous foundries, the two latter being housed under one roof. The outer door of this shop framed a well-proportioned palm-tree. Here, amongst other electric furnaces was one of the Greaves Etchells type. Mr. Etchells during the 1914 war installed at

Meeting of the Dictionary Sub-committee of the International Committee of Foundry Technical Associations, presided over by Mr. Mario Olivo. On his right are Mr. Laine (France), Mr. Vuilleumier (Switzerland) and Mr. Hallett (Great Britain). Mr. G. Blanc, the honorary secretary, is on the president's left.

the Reinosa works one of his furnaces—perhaps this one. It was the second to be installed in Spain, the first was at Altos Hornos de Vizcaya and was put into commission by the writer. Not only does the company undertake marine engineering, but is now making Asquith machine-tools under licence.

S.A. de Construcciones Agricolas Seville

This was a thoroughly modern agricultural implement foundry which had been partially mechanized by Bonvillain & Ronceray of Paris. Shell moulding and the CO_2 Process were highly developed, whilst the cupola was being instrumented for hot-blast practice. The consultant, who is also a Professor at the Seville Technical College, was a Glasgow-trained man. He knew exactly what new plant was needed, and like industry in general in Spain, awaited an improvement in the foreign currency position.

General Notes

Firms supplying foundry plant to Spain must ensure that its production is elastic. Several foundries used their melting plant to make both ingots and castings. This applies to steel and non-ferrous material. Because of the difficulty of foreign purchases, many firms have concluded arrangements for Spanish firms to build plant under licence. Such an arrangement has been made by British Moulding Machine Company, Limited, and a substantial foothold has already been gained in this market. Finally, the Spanish foundry executive is well informed on the latest technical developments, has made up his mind as to his requirements, and will place orders as soon as trading conditions allow.

Ladies' Programme

Those ladies who were fortunate enough to accompany their husbands to Madrid will long remember the very generous programme which was arranged for them and the many touching courtesies extended to them by their Spanish hosts. Sweet nosegays greeted them on every possible occasion and the little gift book on Madrid and its surroundings, so charmingly bound and inscribed, was a stroke of genius. No lady went on a visit without her "little bible" as it became affectionately known and many husbands, kept busy at the *Syndicato* or *Instituto*, will be able to enjoy its pages by their own fireside during the coming months. Visits arranged for the ladies included a tour of the Prado which, though short, was sufficient to catch a glimpse of the masterpieces of Spain's most famous artists, Goya, El Greco and Velasquez, with an unhurried few moments to marvel at the unforgettable "Las Meninas." It was a little unexpected delight to find amongst the Primitives a picture of St. Eloi, one of the Patron Saints of founders, illustrating the traditional story of the two golden crowns. The visit to the Prado was followed by a tour of the Royal Palace, and here amongst all the other priceless treasures, it was especially interesting to see a whole room entirely faced and furnished in ceramics from the old "Buen Retiro" factory which once stood on the site of the main Post Office, hard by the Retiro Gardens.

Further afield, the visits included a day at Toledo, the whole of which is a national monument and which is packed tight with buildings of tremendous historical interest and superb El Greco pictures. Scarcely anyone left without a souvenir made of the famour Toledo craft, which had been seen in the making at a small workshop earlier.

On the next day, a visit was arranged to the *Escorial*, that magnificent and austere monastery and pantheon placed so dramatically in the foothills of the Guadarrama mountains. The austerity was even further enhanced by a mountain mist which, however, quickly dispersed. One could not fail to be impressed by the fearful singleness of purpose and strength of mind of a king who spent his last days of failing health living in the utmost simplicity and discomfort, watching from his crude invalid chair strategically placed on the opposite hillside, as the workmen built what was to be his greatest monument and final resting place. Scarcely had one ceased musing on the burial places of kings and wakened from a little siesta when the coach arrived at a burial place of another sort, the very newly completed basilica and Valley of the Fallen. This huge memorial hewn out of the rocky hillside and surmounted by an incredibly high cross, is placed at the head of a very beautiful valley and is dedicated to all those who gave their lives for their country in the recent "War of Liberation."

The week's programme ended with that very feminine institution—a mannequin parade. Shown during tea at the Palace Hotel, the collection was presented by one of Madrid's leading courturiers and it was a delight to see such lovely clothes on even lovelier girls.

The ladies of 21 nations will remember, with a deep sense of gratitude and privilege, the occasion of the 26th International Congress which was so happily centred in Madrid and which gave them so unique an opportunity to enjoy some of Spain's treasures of art and architecture.

House Organs

Sankey Vendo News, No. 5. Issued by Joseph Sankey & Sons, Limited, Hadley Castle Works, Wellington, Shropshire.

This is a special edition prepared in connection with the Dairy Show (held in London, October 27 to 30), which stresses the potentialities of the milk-vending machines manufactured by the company.

Ingot, September 1959. Published quarterly by Richard Thomas & Baldwins, Limited, from 82, Brook Street, London, W.1.

The reviewer finds it difficult to visualize the class of reader this house organ is meant to interest. It makes no special effort to tell the employees of the usual sporting and social events, nor does it set out to emphasize to customers the worth of the products of the company; yet it has for the general reader a distinct appeal. It is well produced, beautifully illustrated in colour and very well written. Speaking as a general reader, the reviewer thoroughly appreciated the contents of this obviously prestige magazine.

Equipment & Supplies

Barrel-type Shotblast

Hepburn Conveyor Company, Limited, Rosa Works, Wakefield, are now manufacturing a very large and heavy-duty barrel-type shotblast unit, specially designed for handling sizeable castings. The new model is the Pangborn 72 cub. ft. Blastmaster which is reported to be capable of handling ton-size castings in loads up to 5 tons. In this unit, two large (5-in. wide) Rotoblast impeller wheels, powered by 40-h.p. motors, hurl 60 tons of metal abrasive per hour—said to be more than any other batch-type barrel ever built—against the castings to be cleaned. It is claimed that this unit permits fastest and lowest-cost cleaning of castings of a size previously considered too heavy and bulky for tumble-blasting. Pangborn's patented abrasive-separator is incorporated to eliminate the excessive wear on wheel vanes, caused by inadequate removal of sand and dirt from the re-cycled abrasive. A solid-plate, abrasive-tight door of a completely new design retains abrasive inside the machine, and wheel-housings and blast chamber are lined with special wear-resisting material, the drum ends being of manganese-steel. The horse-power of the motors used on shaker conveyor, power door and abrasive elevator range from double to triple that used on conventional machines of this type. Lower labour costs are also claimed in the use of this model, where push-buttons replace manual work. The castings conveyor is the heaviest-known apron-type conveyor ever built and is made to permit the use of two supporting chains instead of four. Trouble-some centre chains have been eliminated so as to remove a further source of high maintenance costs.

Respirator

The Dustfoe 66 respirator, manufactured by Mine Safety Appliances Company, Limited, Queenslie Industrial Estate, Glasgow, E.3, has recently been granted H.M. Factory Inspectorate Certificates approving its use under the Iron and Steel Foundries Regulations 1953. The latest model of the respirator has a contoured face cushion which gives a natural fit and good wearing comfort. This sponge cushion is easily replaceable.

The exhalation valves now fitted to the respirator are larger than those used previously, and reduce resistance to a minimum. Static web filters treated with an electrostatically-charged resin are incorporated. The filter holder is narrow, which minimizes blind spots and gives greatly increased downward vision. The complete respirator, including the headband, weighs only three ounces. The band is a two-piece elastic type with positive locking, slide-band adjustment and easy snap action with D-ring release.

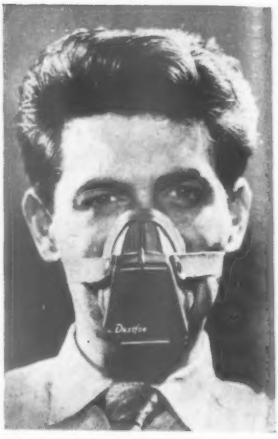


FIG. 2. — *Improved respirator manufactured by Mine Safety Appliances Company, Limited, of Glasgow.*

FIG. 1.—*Small automatic air-compressor, made by Bellanger Bros. (London), Limited.*

Air Compressor

Bellanger Bros. (London), Limited, 306, Holloway Road, London, N.7, have introduced a small automatic air-compressor plant (see Fig. 1). The machine has an automatic stop/start pressure switch, airfilter, moisture separator, pressure controller with both high- and low-pressure dial gauges, all the usual tank fittings and a receiver to the latest B.S. specifications. The motor is television-suppressed, and the machine is claimed to operate very silently.

Electronic Weigher

Electroweighers, Limited, Moseley Street, Birmingham 12, are marketing a heavy-duty automatic and continuous weigher. The operating technique involves the use of a dustproof load cell, incorporated in a single idler weighbridge. The weight of the burden on the conveyor belt pressing on the cell induces an unbalanced voltage, which, when amplified, gives direct readings of the momentary load. An additional voltage from a tacho-generator, driven on the return belt, is multiplied and integrated with the oscillator voltage. The resultant sum, *i.e.*, total burden conveyed, is indicated by means of counters. High accuracy is claimed.

R.C.I. to distribute Philips Industrial Products:

With effect from November 1, Research and Control Instruments, Limited, Industrial Products Division, Instrument House, 207 King's Cross Road, London, W.C.1, became the sole distributors in the United Kingdom for the industrial products at present marketed by its associated company, Philips Electrical, Limited. R.C.I. will also take over the responsibility for the maintenance of existing Philips equipment.

Quick-drying Primer: Arthur Holden & Sons, Limited, Bordesley Green Road, Birmingham, 9, are now marketing a general-purpose grey primer, with a drying time of only 10 min., which can be applied to most metals and to hardboard.

Construction of an Oil-fired Reverberatory Furnace for Melting Aluminium

*By G. A. Hodges**

During a recent survey[1] on the working conditions in 14 non-ferrous foundries, observations made showed that good working conditions could result from efficient furnace design. In consequence, a new oil-fired reverberatory furnace was designed which could replace the conventional crucible-type bale-out furnaces used for melting aluminium. Kent Alloys, Limited, of Strood, Kent, decided to build one of these new furnaces, and to subsequently investigate the possibilities of a cast-in-situ refractory concrete (backed by insulating concrete) as a lining to the bath. The work done at Strood is described below.

A thermal environment survey[1] was recently carried out in which an experimental furnace to melt 250 lb. metal was built, constructed in such a way that the flue gases preheated the metal. The efficiency of this furnace was compared with the bale-out furnace which it replaced. The same alloy was melted in two furnaces, they served the same pressure-die machine, and used the same fuel. It was found that the reverberatory furnace replaced both the melting and holding bale-outs, and gave slightly more metal than the pressure die could take. Thermal efficiency figures obtained were 13.55 per cent. for the bale-out, and 28.65 per cent. for the reverberatory. Working conditions in the vicinity of the reverberatory furnace were considerably better than around the bale-out furnaces.

In view of the success of the 250-lb. furnace a second furnace was designed, to melt 600 lb. aluminium. Oil was burned in a combustion chamber above the bath, which was so designed to give a rotary movement to the flame, which played directly on to the metal. The flue system was arranged so that the effluent gases preheated the metal fed into the furnace. The metal was fed in at two levels, the lower shelf being used for ingots and the upper one for "dirty" scrap. Thermal efficiency figures for this furnace are given as 31.9 per cent.

REVERBERATORY FURNACE

Kent Alloys, Limited, of Strood, Kent, obtained the drawings of the furnace designed for the thermal environment survey, and the metal shell was constructed. This furnace had been made with a 600-lb. capacity, but as 400 lb. was considered adequate for the necessary production at Kent Alloys, the size of the bath was modified slightly, by raising the hearth 3 in. to give the required capacity (see Fig. 1).

Construction of the Bath

The construction of the bath was as follows. A 3-in. thickness of loose fill of calcined diatomite was placed on the metal floor of the furnace, and the suction thoroughly tamped out with water. On top of this a 3-in. thickness of insulating concrete was cast, using a mix of 1 part Ciment Fondu to 4 parts calcined diatomite ($\frac{3}{16}$ in. to dust)† by volume. Thin steel strips were then positioned round the walls 3 in. from the steel shell, and insulating concrete cast in to give a 3-in. lining against the shell.

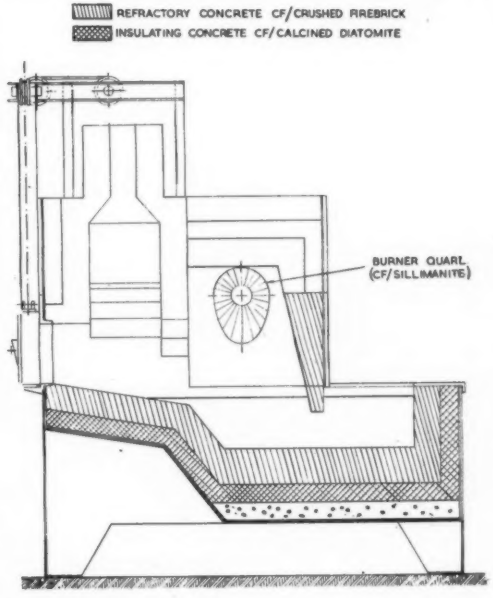


FIG. 1.—*Drawing showing the materials used in the reverberatory furnace installed by Kent Alloys, Limited, for melting aluminium.*

The rest of the floor was filled in with a Ciment Fondu refractory concrete consisting of 1 part Ciment Fondu : 2 parts $\frac{1}{8}$-in. to dust crushed firebrick; 2 parts $\frac{1}{4}$-in. to $\frac{1}{8}$-in. crushed firebrick (by

* Mr. Hodges is die-shop superintendent at Kent Alloys, Limited, of Strood, Kent.

† Throughout this article such figures indicate the particle size, *i.e.* all the material passed through a $\frac{1}{8}$-in. mesh.

Oil-fired Reverberatory Furnace

volume) to form the floor of the bath. The thin steel strip separating the two types of concrete was raised while the concretes were still wet and the surface lightly tamped to consolidate them, so that they would combine and harden together forming a composite structure. The walls were cast in a similar manner to give 3 in. of insulating concrete against the steel, with an inside thickness of 4½ in. of refractory concrete for the inside hot face of the bath.

Curing

The complete bath and ramp were cast in about five hours by three men, the whole of the concrete being hand-mixed. Curing was effected by filling the bath with water when the concrete was sufficiently hard, about two to three hours after placing had finished. The amount of concrete used in the bath was approximately 8 cub. ft. of insulating concrete and 12 cub. ft. of refractory concrete.

Other Furnace Parts

Other parts of the furnace for which a refractory concrete was used were the burner quarl and the wall of the combustion chamber immediately above the hearth, the bottom part of which formed the dam separating the bale-out portion of the furnace from the melting part. A higher-refractory concrete was necessary for the burner quarl, and this was obtained by using sillimanite (a more refractory aggregate than crushed firebrick) in a mix of 4 parts ⅜-in. to dust sillimanite : 1 part Ciment Fondu (by volume). It was considered that the dam would be subjected to rather severe conditions, particularly from flame scour on the inside edge, and it was decided to make this from a Ciment Fondu/fused-alumina mix, whilst the mix for the upper part (which formed the front wall in the combustion chamber) was the same Ciment Fondu/crushed firebrick mix that was used for the bath. Drying-out of the furnace was gradual, a low flame being used from the burner, and holes were drilled in the bottom of the steel casing to allow the water driven off from the concrete to escape. After drying out for two to three days, the furnace was taken up to temperature and aluminium melting commenced.

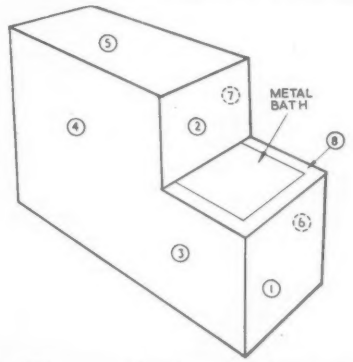


FIG. 2.—*Diagram showing positions at which temperature measurements were taken when carrying out tests on the radiation from the furnace walls.*

Radiation Tests

At this stage, tests were carried out on the radiation from the furnace walls. Fig. 2 gives details of the positions at which temperature measurements were taken with a surface pyrometer. The following table shows the results obtained.

FIG. 3.—*General view of the reverberatory furnace for melting aluminium, at Kent Alloys, Limited.*

Air temperature 9.5 deg. C. (49 deg. F.).

Surface temperatures at points shown in Fig. 2.

Deg. C	*Deg. C.*
1.— 30	5.— 52
2.—112	6.— 35
3.— 23	7.—110
4.— 45	8.— 71

Inspection after Six-weeks' Operation

Owing to pressure of work the furnace (see Fig. 3) was run for about 11 hr. per day, and only after about six weeks was it emptied of metal to allow an inspection of the concrete. The concrete hearth ramp and walls were in excellent condition, being very hard but covered with a white dust which was probably alumina derived from oxidation of the metal. There was a slight crack across the floor of the bath and another up the middle of the ramp due possibly to contraction, but these were not very severe and probably confined to the surface of the concrete, since no metal loss or penetration was observed. The floor of the bath was remarkably clean and free from metal, which indicated that the non-wettable property of the concrete could prove very important when a speedy turn round from one alloy to another was required.

Condition of Dam, and Burner Quarl

Inspection of the dam showed that rather severe wear had taken place, particularly where it had been exposed to flame scour, but its condition did not warrant renewal at this stage. Subsequent inspections proved that the dam had a life of a little over six months, and it is now precast in a Ciment Fondu/crushed firebrick premix and renewed every six months. The burner quarl was in excellent condition, and was still in very good condition after two years' service, when it was unfortunately broken up in mistake by workmen carrying out repairs.

CONCLUSION

This furnace has now been in operation over two and a half years, and the original refractory-concrete bath is still in very good condition. The only repair which has been necessary is minor patching where lumps of concrete have been knocked off accidentally. Working conditions have been vastly improved by the introduction of this type of furnace, and a considerable saving in running costs has been achieved. For instance, the two-and-a-half-years life of the bath is equivalent to the life of 20 crucibles. In addition, about 1½ gall. of oil per hr. is saved, the reverberatory furnace running on 2 gall. per hr. as against 3½ gall. per hr. for a crucible furnace. The melting times achieved when the furnace is being used daily are of the order of 1½ to 2 hr. for melting 400 lb. of aluminium to 750 deg. C.

REFERENCES

[1] Thermal environment survey, by D. Turner, M.SC., PH.D.; W. Lawrie, M.B.E., M.SC., F.R.M.S., A.I.M.; A. Eyden, A.M.I.MECH.E., and A. Edwards, A.M.I.MECH.E., *Metal Industry*, May 11 and 18, 1956.

Lifting of Import Controls

A further major step in dismantling the financial and commercial controls introduced 20 years ago at the beginning of the war was announced in the House of Commons on November 4 by the President of the Board of Trade, Mr. Reginald Maudling. Most of the remaining controls on imports from the Dollar Area, western Europe, and a number of other countries were removed with effect from Monday last.

The Government states that it intends to make further progress with the relaxation of the few remaining controls as soon as it can. The treatment of imports from Japan and the Eastern Area (the USSR and other Soviet block countries) and now China is not affected by the measures announced last week.

Items hitherto restricted only from the Dollar Area and now freed from control include:—Those items of machinery not previously liberalized, electrical equipment and apparatus, including valves but not transistors, photographic and cinematographic equipment and films, oil, glass fibre and manufactures.

Other items derestricted include:—Scientific, industrial, and optical instruments, calcium carbide, worked stone and slate, diamond dies, heavy chain, wire cloth, cars and other motor vehicles, amusement machinery, cutlery, glassware not previously liberalized, clocks and parking meters, cigarette lighters, ash trays, and other similar goods.

Copies of the amendment to the Open General Licence will be on sale from HM Stationery Office, Kingsway, London.

Brymbo Steel's Development Plan

Involving capital expenditure of over £2,000,000, Brymbo Steel Works, Limited (a subsidiary of Guest, Keen & Nettlefolds, Limited), is to carry out a second development scheme. The new scheme consists of the complete replacement of the four old ingot reheating furnaces by a continuous bogie furnace and the installation of a new cogging mill, which will enable the works to take full advantage of the increased steelmaking facilities and which will roll ingots two and a half to three times as large as those at present being rolled. At the same time, bottom pouring facilities will be introduced.

A result of the changes will be an increase in the throughput of ingots as soon as the mill comes into operation. Ample steelmaking facilities to enable the increase to take place are already available.

The company's first development scheme was finished this year. It involved the modernization of the steelmaking plant.

Industrial Safety Association

Recognizing the importance of accident prevention, many of the leading manufacturers of industrial safety equipment have formed an Association—the Industrial Safety (Personal Equipment) Manufacturers' Association with the purpose of "tackling the problem from the inside." The Association intends to organize constant analysis and study of materials, design and manufacturing techniques embodied in personal equipment, and to work in close liaison with Government departments, trade unions, medical authorities, etc. for the regular exchange of up-to-date information. With the establishment of this Association, safety and welfare officers will have a ready source of information available for the settlement of their problems and enquiries relating to safety equipment. The address of the Association is 6, Holborn Viaduct, London, E.C.1.

Loughborough College Extension

Work commenced last Monday on the £2,000,000 extension programme planned for the Loughborough College of Technology. The first turf of the 44-acre site was cut by Sir Herbert Manzoni, city engineer for Birmingham and chairman of the College's buildings development sub-committee, at a short ceremony which marked the start of operations. The project, said Sir David Eccles, Minister of Education, in a message to Sir Edward Herbert, chairman of the governors of the College, was "one of the largest and most important in the Government's £160,000,000 plan for technical education."

New teaching buildings and a "student's village," laid out in streets and closes with its own village shops, will go up on the site which is surrounded by 150 acres of playing fields and open space. Some of the buildings are expected to be ready by September, 1960, and the rest by the end of 1961. When completed the College will be the largest residential technical college in this country, with accommodation for about 1,400 students in full-time and sandwich courses, and of these about 1,000 will be living on the campus.

The centre piece of the new buildings will be a six-storey science block with laboratories for the study of aeronautics, automobile engineering, and nuclear energy; a special feature will be a workshop engineering block designed as a miniature factory in which students will learn production techniques. A separate building will house the library which will have an initial stock of 50,000 books. The College Union will also have its own building with a fully-equipped theatre, a games hall of 5,000 sq. ft., a dining room, cafeteria and a buttery.

The "student's village" will be the first of its kind in Britain. About 800 of the students will live in the village in two- and three-storey terrace blocks and for post-graduates of the College there will be a new nine-storey block. The rest of the students will live in existing halls of residence and in lodgings. The architects for the teaching buildings, are Richard Sheppard, Robson & Partners and for the hostel buildings, Harry Fairhurst & Son.

New Chairman of BNFMRA Council

Mr. F. C. Braby, M.C., D.L., M.I.MECH.E. (chairman and managing director of Fredk. Braby & Company, Limited), has been elected chairman of the Council of the British Non-Ferrous Metals Research Association to succeed Dr. Maurice Cook, C.B.E., who retires from office on December 31 next. Mr. Braby, a graduate in engineering of Manchester University, is a prominent figure in the engineering and metal-manufacturing industries. A past-president of the Engineering and Allied Employers National Federation and of the London and District Engineering and Allied Employers Association, Mr. Braby has also contributed much to the managerial efficiency and technical advancement of the galvanizing industry through his service as chairman of the Hot Dip Galvanizers and the Galvanized Tank Manufacturers Associations. Mr. Braby has played an active part in the affairs of the Research Association since 1929, and has been a member of the Council since 1935. In 1950 he was appointed a vice-chairman and hon. treasurer of the Association.

PERGAMON PRESS, technical and scientific publishers, is removing from 4, Fitzroy Square, London, W.1, to Headington Hill Hall, Oxford.

Atomic Energy Exhibition

Dr. J. M. Whittaker, vice-chancellor of Sheffield University, opened the exhibition of the United Kingdom Atomic Energy Authority at Sheffield City Museum, on November 6. This is the first time that the exhibition, which is to go on tour, has been shown to the public. Entitled "Peaceful Uses of Atomic Energy," it includes a working model of Calder Hall, and has reproductions of the fuel elements, both metallic, and the newest type by which graphite is impregnated by enriched uranium. (Dr. Whittaker said that Sheffield University had a small type of "Zeta" and a much larger one was being built.)

A special section of the display showed Sheffield's contribution. This included steel castings, heavy rolled plate, rolling mills, stainless steels, turbine shafts, graphite and metalurgical research. It was said that orders to the value of £5,000,000 had been placed by the Authority in the Sheffield area in the last year. All the stainless steel in the fast breeder reactor at Doonray, said to be "the most complicated fabrication job in Europe," was made in Sheffield. Mr. E. H. Underwood, the Authority's director of public relations, said about the section dealing with isotopes, that in various ways the use of these isotopes was saving British industry £3,500,000 a year—and could save it £14,500,000.

German Foundrymen's Technical Association

In connection with the 50th anniversary of the *Verein Deutscher Giessereifachleute* (German Foundrymen's Technical Association), a special issue of the magazine *Giesserei* has been published. In an editorial, Dr. Schwietzke, tells of the foundation of the Association in Berlin and outlines its subsequent development until the present time when it is catering for every section of the German foundry industry. Dr. Philipp Schnieder, the secretary of the Association, has contributed a long article detailing the history of the Association—unlike the British Foundrymen's Association which started with seven founders, the German one initially had 36. Portraits of the "old-stagers" and the present officers are included. This section is followed by a series of authentic articles on 50 years of grey-iron, malleable, steel, copper-base, light-alloy and white cast-iron founding. Following these there are between 40 and 50 articles covering very completely every phase of foundry practice. The production of this special issue has been magnificently carried out, and the Editor and his staff are to be congratulated on the completely successful outcome of their work.

NU-SWIFT, LIMITED, fire-extinguisher manufacturers of Elland, Yorks, report in their latest *Newssheet* that British exports of fire extinguishers are the highest in the world, and that last year, the company's exports amounted to nearly one-third of the British total.

THE DUTCH SUBSIDIARY of G. & J. Weir, Limited, the Glasgow engineers and founders, etc., Weir N.V., has acquired the business of N.V. "Warmtekracht," Rotterdam, and has moved its headquarters to that address. N.V. "Warmtekracht" will continue its work of repairing heat exchangers and small marine diesel engines up to 2,000 h.p. and new machine shop capacity will be used for the manufacture of Weir products. The new arrangement will give wider service and repair facilities for Weir and Drysdale marine auxiliaries.

Making Plastics Patterns— Practical Working Instructions

By Michael Geraghty

Most foundries in this country have a need for a simple, quick and economical method of producing dimensionally-accurate duplicate patterns. This article describes such a method, in which is used a steel-loaded plastic* developed originally for the production of jigs, fixtures and dies, and for plumbing repair work.

When making cast-resin patterns, the surface of the material has a finish of approximately 32 micro-inches; shrinkage during hardening is negligible; thus there is no practical difference in size between the original pattern and the duplicate. Abrasion resistance material is also good; the physical properties are as follow: tensile strength—4.5 tons per sq. in.; compressive strength—8.0 tons per sq. in.; volume per pound—11.4 cub. in.; shrinkage on a 3 by 4 by 1-in. specimen—0.0005 in. per in. In addition, such material has excellent machinability and can be drilled, tapped, etc.

Step-by-step Procedure

For making duplicates, one should proceed thus :—A wood or metal loose pattern-half is laid on a board and a wooden frame is placed around the pattern and clamped in position. Surfaces of the pattern and the inside of the frame are coated with a mould release-agent. A mixture of high-grade pattern plaster is then poured in slowly until the pattern is covered.

When the plaster has set, the pattern should be removed. The plaster mould is then coated with a heat-resistant sealing lacquer. Alternatively, it is possible to eliminate the need for a coating by placing the mould in an oven at 140 deg. F. for about three hours, which eliminates entrapment of moisture on the mould surface. Because the plastic cures itself by the chemical generation of heat, any moisture present on the mould may expand and cause imperfections on the pattern surface. After sealing or drying, the mould is ready to receive the plastic material, but it should also be coated beforehand with mould release-agent to prevent any adhering to the surfaces.

Necessary Precautions

Proper preparation before pouring the material into the mould is essential. The proportions of the material for admixture with the hardener are most critical and the manufacturer's instructions should be carefully followed at each stage if success is to be assured. This point cannot be over emphasized. Average hardening time is two to three hours at room temperature, depending, of course, on the volume poured. The greater this volume, the quicker the cure. Before removal from the plaster mould, the plastic pattern may be machine-planed level with the surface of the mould.

For the production of the second half of the mould, proceed exactly as for the first half, and here some advantage may accrue from the use of dowel pins and holes. With judicious handling, the plaster mould can be used to reproduce many patterns. If the plastic material itself be used in place of plaster for the mould, many hundreds of duplicate patterns can be produced.

Matchplates can be made by cutting out the pattern outline in a plate or board, aligning the cope and drag plaster moulds on each side of the cut-out, and clamping them in place. The plastic can be poured into the cavities through a simple runner and gating system. Regardless of whether the mounting is on wood or metal, the adhesive quality of the plastic holds the pattern in place.

Desired changes in a pattern may be made beforehand by altering the plaster moulds, as desired, with modelling clay. Because plastic patterns are not affected by humidity or by low and high temperatures, they do not present any storage problems.

* "Plastic steel" is a Devcon product; sole concessionaires for UK and Eire: E. P. Barrus (Concessionaires), Limited.

Powell Duffryn form New Subsidiary

Powell Duffryn, Limited, announce the formation of a new subsidiary company, Powell Duffryn Modulair, Limited, with offices at Powell Duffryn House, Berkeley Street, London, W.1. Its principal function will be the marketing of all types of heating, ventilation and air-distribution equipment, especially the Dravo heater which has hitherto been handled by Weatherfoil, Limited. This heater is manufactured in the UK by Coventry Radiator & Presswork Company, Limited, under licence from the Dravo Corporation, an American engineering concern.

The new company is also taking over from Weatherfoil, Limited, the marketing of Tuttle and Bailey equipment both in the UK and in many overseas countries.

The chairman of the new company is Mr. W. H. Sharland and it will be managed by Mr. E. B. Overton. Mr. Sharland is deputy chairman of the parent company, Powell Duffryn, Limited, and Mr. Overton was formerly a director of Weatherfoil, Limited, from which company he has resigned. He is also a director of Janitor Boilers, Limited—another Powell Duffryn Group company. Mr. Barrie Heath, managing director of Powell Duffryn Carbon Products, Limited, and Mr. R. H. Stewart, managing director of Janitor Boilers are also on the board.

DSIR Industrial Organization Reports

Amongst summaries of reports available from the lending library unit of the Department of Scientific and Industrial Research at 20, Chester Terrace, London, N.W.1, appear two of interest to founders, *viz:*— Ref. No. TIDU 6914, Plant requirements to set up and operate a grey-iron jobbing foundry—40 pages; price: Microf. 10s. Enlarged print 50s. TIDU 6935. Plant requirements to set up and operate a brass foundry—84 pages; price: Microfilm 21s.. Enlarged print, price on application.

These reports may be seen at the address quoted and may be borrowed free of charge (but each application must be made on a Science Library loan requisition form). Photocopies can be supplied at the prices stated; payments should *not* accompany orders.

The information reported has recently been made available by the technical-aids branch, International Co-operation Administration, Washington. The reports give advice on the type of plant to be installed, manufacturing operations, cost of machines and materials and on layout. Operational economics are discussed, these including topics of labour costs, overhead charges, capital requirements, credits and marketing. Mention is made of the rôle of workers training, welfare activities and of safety regulations.

Coal Board No Longer a Monopoly

"The Coal Board is no longer a monopoly"—said Mr. Paul Chambers, chairman-elect of Imperial Chemical Industries, Limited, and a part-time member of the National Coal Board, in his closing address to the Combustion Engineering Association conference at Scarborough last week—"it is the supplier of one fuel which is fighting hard with other fuels. In that fight, we have to realize that oil, gas, and—in some countries—natural gas—can flow easily through the equipment in which they are being burned. And at the other end of the chain, with coal you have a residue of ash to dispose of, whilst gas and oil leave no solid residue. If we can introduce automation into the boiler house, and into the coal-burning appliances of industry, the cost of making coal flow in the same way that oil and gas will flow can become relatively small. The user can get back to considering the cost of the fuel itself, and its advantages and disadvantages. As a member of the National Coal Board I have been heartened by the work which is being done in this field. I believe that coal is going to remain our chief economic fuel for many years to come."

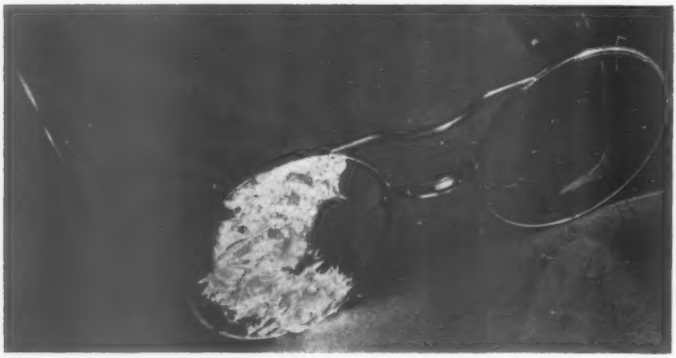
National Foundry Apprentices Competition

Forty-six candidates from foundries all over the country entered for the National Foundry Apprentice's Competition which was held on November 6 with a view to finding suitable young men to represent the British foundry industry in next year's International Foundry Competition. In general, arrangements were made for the tests to be carried out in a number of industrial centres, the organization being in the hands of local branches of the Institute of British Foundrymen.

Candidates were drawn from foundries dealing with all types of material—steel, iron, light alloys, bronze and brass. Entrants from the London area totalled seven and it is noteworthy that six of these are from firms belonging to the Association of Bronze and Brass Founders. (The interest which was aroused among Bronze and Brass Founders by the ABBF Competition which was held earlier in the year may be partly responsible for this.) The firms who have sponsored personnel for the competition are to be congratulated on their public-spiritedness in furthering the interests of youth within the industry. Results of this preliminary event are not expected to be announced before the New Year.

South Durham's New Blast-furnace

Mr. T. J. Williams, director and group general manager, South Durham Steel and Iron Company, Limited, lit a new blast-furnace on Saturday (October 31) which, with an output of more the 1,000 tons of pig-iron a day is the largest ever built for the company. The furnace, which, with its auxiliary plant has cost about £1,500,000, is at the company's North Works, West Hartlepool, and, when in full production, will more than double the pig-iron output from the works. After lighting the furnace, Mr. Williams said "It is a pointer to the way the company has developed and modernized, particularly over the past 12 years, and we are continuing still further with our new South Works, and a blast-furnace there will still be bigger." The new furnace, built by Ashmore, Benson, Pease and Company, Limited, Stockton, has a hearth diameter of 25 ft. 6 in. and when in full production is expected to yield an output of 7,500 tons of pig-iron per week, which will boost the pig-iron capacity of the North Works to between 13,000 and 14,000 tons a week.



Grim Warning*

A grim warning of the danger of splashes of molten metal and the constant necessity for wearing adequate eye-protection devices is embodied in the illustration reproduced alongside. The photograph was accompanied by the statement that the moulder wearing this pair of spectacle-type goggles was splashed with molten aluminium, presumably at about 700 deg. C. The man received slight burns on the head and hands but was able to continue his work.

*From information supplied by Safety Products, Limited.

New Works for H. C. Hopper (Norwich), Limited

Industrial development has been started in the heart of Norwich, on a site of almost three acres bounded by Coslany Street, Colegate and the River Wensum. Part of this expansion will involve the firm of H. C. Hopper (Norwich), Limited, engineers, patternmakers and founders, and will cost £35,000. When completed, the development will change the face of Coslany Street and, if the hopes of the managing director of the firm (Mr. R. Scott) are realized, will provide work for 400 to 500 men. It was announced some months ago that H. C. Hopper (Kingston), Limited, had merged with Barnards Foundry, Limited, in Norwich, and that it was hoped to join the iron and non-ferrous foundries of both companies into two large foundries in Norwich, to be known as Barnards Foundries, Limited. It was eventually decided, however, that the two companies should become one under the name of H. C. Hopper (Norwich) Limited, Norfolk Iron Works, Coslany Street.

The move from Kingston is now completed, and some 30 skilled workers have moved to Norwich, making the number of men employed by the firm in Norwich now up to 125. At present, the pattern-making shop and machine-shop are at Salhouse Road (see Fig. 1), but when the development is complete the wood- and metal-pattern-shop, the machine-shop, and new and much bigger foundries for both iron and non-ferrous metals will all be together at Coslany. It is intended to enlarge the iron-foundry space considerably, and eventually to produce castings up to ten tons in weight—these castings will be machined in the same works.

Mr. R. Scott, the managing director of the new firm, was last year's president of the National Society of Master Patternmakers, and is a Council member of the South of England Founders' Association. He brings with him to Norwich a wealth of experience and many good business connections. A bright future is forecast for the engineering, patternmaking and foundry business in Norwich if it keeps up to date, so the new buildings at Coslany are being equipped with the most modern plant. Machine-tools costing £50,000 are on order, and the next step will be to train more skilled men to use them. The firm's policy is to employ young men and train them under the supervision of highly-skilled veteran workers. In this way an important contribution to employment in the city's engineering industry can be confidently expected.

FIG. 1.—*Part of the present patternmaking shop, at Salhouse Road, of H. C. Hopper (Norwich), Limited. The item shown under construction is a pattern for part of a large machine-tool.* (Courtesy: Eastern Evening News)

British Equipment for Russia

Equipment which will be used for drilling very hard rock faces and which represents the latest design in mobile drilling plant figures largely in the recent Russian contract awarded to Climax Rock Drill & Engineering Works, Limited, London, E.C.2, a member of the Holman Group. F. Taylor & Sons (Manchester), Limited, Salford manufacturers of leather belting and cranes, and a member of the Steel Group, shares in the contract which is worth well over £250,000. Both companies have played a leading role in the development of this type of equipment in the UK.

The machines for the Russian contract are an adaptation of the Taylor-Hurd mobile electric mining drill, the operating platform being carried on a double telescoping tower which is raised by two hydraulic rams from 6 ft. to a maximum of 19 ft. 6 in. from ground level. The machines weigh about 15 tons each and are mounted on crawler tracks.

Industrial Production Rises

Index of industrial production for September is given, provisionally, as 114-115, compared with 98 for August and 102 for July. The sharp rise, however, merely reflects the end-of-holiday seasonal influence and, when seasonally adjusted, is likely to be 112-113, compared with 113 for August and 112 for July.

There would appear to be an increase of 7 per cent. on September, 1958, and of 3 per cent. on September, 1957. In the third quarter as a whole production was 2 per cent. above the previous three months and 7 per cent. higher than in the corresponding period last year.

In the second quarter wages and salaries rose by 4 per cent. compared with the second quarter of 1958, and for similar comparable periods gross trading profits of companies were up by 15 per cent. and gross profits plus other trading incomes rose by 9 per cent.

Capital investment rose by 4 per cent.—5 per cent. in the private sector (£519,000,000) and 3 per cent. in the public sector (£359,000,000).

Personal

Mr. WILLIAM M. GRAINGER and Mr. DAVID D. CARRINGTON have been appointed to the board of Walter Somers, Limited.

Mr. H. C. CLEMENTS has resigned as director and executive of W. Canning & Company, Limited, owing to continuing ill-health.

Mr. R. E. CARR has resigned from the board of John Dale, Limited. He is to be invited to become the first president of the company.

Mr. RALPH CARR has been appointed managing director of Alston Foundry Company, Limited, steel-founders, Alston, Cumberland.

Mr. N. E. CRUMP, president of the Canadian Pacific Railway Company, has been elected a director of the International Nickel Company, Limited.

Mr. T. W. HEATHER, assistant managing director of the General Electric Company, Limited, has retired. He was a member of the board for over 21 years.

Mr. HERBERT SLACK, formerly technical sales manager, has been appointed to the board of Kelvin & Hughes (Industrial), Limited, as sales director.

The address of the new secretary of the International Committee of Foundry Technical Associations, Dr. P. W. MÜLLER is Post-box HB2815 Walchestrasse 27, Zurich 23, Switzerland.

Colonel C. G. LANCASTER has become managing director of Plowright Bros. Limited, engineers, Chesterfield and London, a subsidiary of the Bestwood Company, of which he is chairman and managing director.

Mr. F. W. NIELD (technical development manager), Mr. D. EPSTEIN (chief chemist) and Mr. MICHAEL DANISCHEWSKY (works superintendent) have been elected to the board of F. & M. Supplies, Limited.

Mr. JAMES FRASER, an area plant inspector with Balfour, Beatty & Company, Limited, engineers, was killed on October 29 when his van was in collision with a lorry on the Great North Road between Dunkeld and Pitlochry.

Mr. M. STUPFLER, assistant managing director of the *Centre Technique des Industries de la Fonderie*, has been made a Chevalier of the Legion of Honour; the recommendation was made by the Minister of Industry and Commerce.

Mr. RONALD R. TAYLOR, managing director of Robert Taylor & Company (Ironfounders), Limited, Muirhall Foundry, Larbert, has been appointed by the Secretary of State for Scotland as a member of the Glenrothes Development Corporation.

Mr. BERNARD W. DAWKINS, joint managing director of Bennis Combustion Company, Limited, mechanical-stoker manufacturers, Walkden, Manchester, has been appointed vice-chairman, and Mr. T. M. DICKSON has joined the board as managing director.

Mr. HARRY EELES has been appointed a director of development at the British Institute of Management, with the primary responsibility of developing the Institute's relations with the larger industrial and commercial concerns throughout the country.

Mr. E. M. CLELAND, of Bairds & Scottish Steel, Limited, has been appointed president of the Glasgow Commercial Exchange. Mr. J. L. THOMSON, area marketing manager of the central area of the Scottish Divisional Coal Board, has been elected vice-president.

Mr. MICHAEL PARKINSON has been elected a vice-chairman of Crompton Parkinson, Limited, and Mr. J. B. SCOTT has been elected a director. Mr. E. C. HOLROYDE has resigned as a vice-chairman and director at his own request in order to allow for the appointment of younger men.

LORD ADAMS OF ENNERDALE, O.B.E., who began his working life as an iron-ore worker and subsequently became full-time secretary of the Cumberland branch of the Winding Enginemen's Union, will retire this month from the secretaryship of the Cumberland Development Council, an appointment he has held for 22 years.

Mr. ALLEN L. STOCK, due to his recent appointment as chairman of the Morgan Crucible Company, Limited, finds he is unable to continue to carry out the full duties of chairman of Lodge Plugs, Limited, and will, therefore, relinquish his position as chairman and resign from the board of Lodge Plugs at the next board meeting on November 17.

Mr. JOHN HUNT, a director of R. Hostombe, Limited, ferro-alloys, 2, Regent Street, Sheffield, left by air for Japan on October 31. He is to have talks with the Tokio firm with whom Hostombe's have an arrangement for the import of 70,000 tons of chrome-ore yearly from the Philippines, and the export of aluminous raw materials to Japan from South Africa.

Mr. FRANK PERKINS has been elected chairman of Ambrose Shardlow & Company, Limited, the Sheffield crankshaft manufacturers, and Mr. J. C. PROUDFOOT has been appointed managing director following the death of Mr. T. P. N. BURNESS. Mr. Perkins, founder and chairman of F. Perkins, Limited, the Peterborough diesel-engine company, and a director of Massey-Ferguson Holdings, Limited, became a director of Ambrose Shardlow early this year. He is also chairman of Lawes Chemical Company, Limited.

Mr. A. P. H. AITKEN has been appointed deputy chairman of Textile Machinery Makers, Limited, and will have overall responsibility to the Stone-Platt Industries board, of which he is a member, as divisional director for companies of the Stone-Platt Group in Lancashire and Yorkshire concerned with the manufacture and sale of textile machinery. Mr. Aitken is succeeded as managing director of Textile Machinery Makers by Mr. G. HARDMAN. Mr. F. G. HAWKINGS is appointed to the board as commercial director.

Mr. THOMAS G. ELLISON and Mr. ARTHUR E. SKAN have been appointed joint managing directors of George Ellison, Limited, manufacturers of electric switchgear and motor-control gear, Birmingham. Mr. Thomas G. Ellison is a son of the founder of the company, the late Mr. George Ellison, and has been a director since 1929. He was elected chairman of this and of the associated companies Alfred Ellison, Limited, and Tufnol, Limited, in 1955. Mr. Arthur E. Skan has been a director of all three companies since 1944 and is managing director of Tufnol, Limited.

Mr. JOHN HARRISON has been appointed managing director of Atlas Copco (Great Britain) Limited, in place of Mr. J. C. GREIG, who has resigned. Mr. Harrison was apprenticed to the Ashington Coal Company in 1931 and stayed with this company until 1942, gaining his first-class colliery manager's certificate during that period. After nationalization of the coal industry he was appointed an area production manager of the NCB, and served in this capacity for five years, joining Atlas Copco in 1953. In 1957 he was transferred to the New Zealand associate company as managing director, returning to Britain—in the capacity of deputy managing director of Atlas Copco (Great Britain)—in June, 1959.

British and World Shipbuilding

Lloyd's Register Returns for September Quarter

Steamships and motorships under construction at the end of September totalled 292 ships of 2,097,764 tons gross, an increase of 64,019 tons as compared with the previous quarter, according to Lloyd's Register shipbuilding returns relating to merchant ships of 100 tons gross and upwards. The total comprises 92 ships of 553,331 tons fitting out afloat, and 200 of 1,544,433 tons still to be launched.

Apart from the June quarter, the total now under construction is the lowest since June, 1957. Some 63 ships of 313,183 tons were commenced, 61 ships of 289,571 tons were launched and 51 ships of 250,894 tons were completed. The vessels under construction included 50 steamships of 1,025,127 tons, and 242 motor ships of 1,072,637 tons. In other Commonwealth countries there were under construction 10 steamships of 104,290 tons and 44 motor ships of 115,458 tons.

Oil tankers building in Great Britain and Northern Ireland totalled 64 ships of 1,024,890 tons, which is 29,202 tons more than in the June quarter, and represents 48.9 per cent. of the total tonnage under construction in this country. Construction in hand in the principal districts of Great Britain and Northern Ireland is indicated in Table 1.

TABLE 1.—*Shipbuilding Construction in Hand in the Principal Districts of Great Britain and Northern Ireland.*

District.	September 30, 1959.		June 30, 1959.		September 30, 1958.	
	No.	Gross tonnage.	No.	Gross tonnage.	No.	Gross tonnage.
Aberdeen ..	17	19,512	17	24,361	16	31,206
Barrow ..	2	67,500	2	67,500	3	94,500
Belfast	14	289,100	15	293,953	17	305,740
Bristol ..	2	3,844	1	3,500	3	6,200
Clyde:						
Glasgow ..	48	484,677	46	452,914	68	529,475
Greenock ..	23	160,620	23	143,520	30	178,260
Dundee	6	32,128	6	40,514	5	40,300
Hartlepool ..	3	25,710	3	25,710	6	44,840
Hull	43	15,621	38	12,461	37	17,182
Leith	9	40,826	8	32,326	11	57,350
Liverpool ..	13	130,857	12	111,638	13	124,719
Middlesbrough	9	137,632	11	171,953	15	187,679
Newcastle-upon-Tyne	33	391,476	34	408,183	40	414,334
Southampton ..	9	10,839	7	11,064	8	3,469
Sunderland ..	30	270,201	24	215,489	27	240,056

The sizes of steamships and motorships under construction in Great Britain and Northern Ireland included the following:—100 to 500 tons, steam nil (103 motorships); 500 to 1,000 tons, steam 3 (14); 1,000 to 2,000 tons, steam nil (12); 2,000 to 4,000 tons, steam 3 (12); 4,000 to 6,000 tons, steam 1 (7); 6,000 to 8,000 tons, steam 1 (21); 8,000 to 10,000 tons, steam 3 (28); 10,000 to 15,000 tons, steam 9 (40); 15,000 to 20,000 tons, steam 2 (4); 20,000 to 25,000 tons, steam 8 (1); 25,000 to 30,000 tons, steam 6 (nil); 30,000 to 40,000 tons, steam 10 (nil); 40,000 and above, steam 4 (nil).

Apart from the Communist countries, there were under construction in the world 1,463 steamships and motorships of 9,813,557 tons, of which 21.4 per cent. were being built in Great Britain and Northern Ireland. The present total is 74,521 tons more than last quarter.

British Trade Fairs Overseas

Originally formed by the Federation of British Industries to organize the British trade fair in Baghdad in 1954, British Overseas Fairs, Limited, is to have a wider basis of operation and organization to equip it for the increasingly important task of organizing British trade fairs overseas. The British Exhibition in New York next June—its present main task—will be the biggest and most important display of British industry's consumer and engineering products ever to be shown overseas. Further projects in other parts of the world are under consideration.

Among arrangements which have been approved by the Board of Trade are the appointment of new directors, advice on overseas fairs by a new export promotion policy committee, new capital, and a top level executive committee for the New York exhibition.

The board of BOF which has consisted of Sir Norman Kipping (chairman), director-general of FBI, Mr. W. P. N. Edwards (managing director), Sir Leslie Gamage, chairman and managing director of General Electric Company, Limited, chairman of Pirelli General Cable Works, Limited, and a member of the board of many companies associated with electrical engineering and manufacturing, Lt.-Col. Lord Dudley Gordon, chairman of Hadfields, Limited, and Millspaugh, Limited, and a director of Manganese Steel Company, Limited, and other companies, and Mr. P. F. D. Tennant, overseas director of the FBI, is to be strengthened by the addition of Mr. Frank Bower, president of the Association of British Chambers of Commerce, and Mr. M. D. Oliphant, president of the National Union of Manufacturers.

To assist BOF in the New York exhibition, the following executive committee has been set up:—Lord Rootes, chairman of the Dollar Exports Council, chairman and member of the boards of many companies in the motor-car manufacturing field; Mr. W. H. McFadzean, president of the FBI, chairman and managing director of British Insulated Callender's Cables, Limited, and associated and subsidiary companies, and chairman of British Copper Refiners, Limited; Sir Hugh Stephenson, Consul General in New York; Mr. Peter Garran, Commercial Minister, British Embassy, Washington; Sir Norman Kipping; Sir Francis Evans, BOF liaison officer for supporting programmes, and a director of Dewrance & Company, Limited, makers of boiler mountings, etc., of London, S.E.1; Sir Alexander Brackenridge, chairman of the Exhibition Liaison Committee in New York, and Mr. W. P. N. Edwards.

BVMA Election of Officers

The British Valve Manufacturers' Association announce that Mr. F. Burgess (White-Nunan, Limited) has been elected chairman of the Association for the year 1959/60, and Mr. J. W. Plowman (Dewrance & Company, Limited) has been elected vice-chairman. The other members of the executive committee for the year 1959/60 are : Mr. D. Bailey, Sir W. H. Bailey & Company, Limited ; Mr. F. T. Bintcliffe, J. Blakeborough & Sons, Limited ; Mr. D. S. Birkett, Samuel Birkett, Limited ; Mr. G. F. Chambers, Bryan Donkin Company, Limited ; Mr. F. S. Ham, Ham, Baker & Company, Limited ; Mr. H. R. Hammond, Crane, Limited ; Mr. K. M. Leach, Audley Engineering Company, Limited ; Mr. N. P. Newman, Newman, Hender & Company, Limited ; Mr. T. B. Pattison, Alley & MacLellan, Limited ; Mr. A. Robertson, Glenfield & Kennedy, Limited, and Mr. A. L. Trump, Saunders Valve Company, Limited.

IBF National Works Visits Day in Pictures

The pictures reproduced below and on the facing page were all taken during the National Works Visits Day function of the Institute of British Foundrymen, held on October 30. This was the date when, as reported in last week's issue, 230 foundrymen from all parts of the United Kingdom "descended" on the Metropolitan area for a series of visits to foundries—to eight works in all. The party visits were organized this year by the London branch of the Institute, as was the dinner held on

FIG. 1.—*Group of visitors from the IBF in the works of Le Grand Western Foundries, Limited, at Southall, Middlesex.*

FIG. 2.—*Section of the* 160 *or more foundrymen assembled at the National Works Visits Day dinner, held in Lyon's Corner House, Tottenham Court Road.* Shown standing, at the top table, are (left to right):—Mr. R. B. Templeton (IBF past-president); Mr. C. H. Wilson (IBF president); Mr. L. A. S. Harbourne (compère); Mr. J. Bain, A.M.I.MECH.E. (branch president—and chairman at the dinner); Mr. E. S. Renshaw (Ford Motor Company, Limited); Mr. D. A. Richards (IBF junior vice-president); Mr. G. Skript (Langley Alloys, Limited); Mr. J. Blakiston, M.I.MECH.E. (IBF past-president); Mr. R. N. Stallard (G. D. Peters & Company, Limited), and Mr. R. S. Goodfellow (R. & A. Main, Limited).

FIG. 3.—*The IBF national president, Mr. C. H. Wilson (left) and national secretary, Mr. G. Lambert (right) at the luncheon following the visit to British Bath Company, Limited, at Greenford. The third member of the party is Mr. G. R. Webster, director of the host firm.*

the same evening at a West End restaurant. Luncheon and tea were taken at or near the various works, and on these occasions the foundrymen visitors were the guests of the firms concerned. (Details of the foundries visited were recorded in the issues of the JOURNAL for October 22 and 29.)

In addition to the top table guests mentioned in the caption to Fig. 2, the following were also guests of the branch at the dinner—Mr. H. S. Williams (of Langley Alloys, Limited), Mr. A. Talbot (of Le Grand Western Foundries, Limited), Mr. A. F. Masters (of Broom & Wade, Limited) and Mr. G. R. Webster (of British Bath Company, Limited). Mr. H. W. Keeble, who was to have represented K. & L. Steelfounders and Engineers, Limited, was prevented at the last moment from attending, but sent an apology and good wishes.

FIG. 4.—*Informal group photographed before the dinner party: from left to right, Mr. G. I. Duffin (Sheepbridge Alloy Castings, Limited); Mr. S. C. Marlow (British Industrial Sand, Limited); Mr. L. Brown (Premo Pattern Company, Limited); Mr. F. Collins (Ex-Cell-O Corporation (Machine Tools), Limited), and Mr. E. C. Rowen (Pattern Equipment Company (Leicester), Limited).*

Since the event, numerous letters received by the Institute and the host firms have testified to the great and practical worth of this series of visits.

FIG. 5.—*Part of the group of* 30 *IBF members with their hosts (Mr. Dick Broom, Mr. C. Broom Smith, Mr. H. T. B. Evans, Mr. Tozer and Mr. Wood) at lunch in the Fitzroy Club, Marlow, during the whole-day visit to Broom & Wade, Limited, High Wycombe.*

Notes from the Branches

Northampton Section

Works Visit to Alumasc, Limited

In October, 41 members of the Northampton and district section of the Institute of British Foundrymen visited the works of Alumasc, Limited*, of Burton Latimer, to see their low-pressure aluminium-die-casting plant. The party was received by Mr. E. C. Lewis, managing director, who explained some of the difficulties in making aluminium castings and the advantages to be gained by his process.

This works has developed rapidly since the war, and now employs 400 people to produce 65 tons per week of aluminium castings and finished units composed mainly of beer barrels, rainwater goods and holloware, while lesser quantities of a very wide range of castings are also made, such as carburettor bodies, chairs, switch-boxes, clock cases and lampholders.

Metal is melted in five Sklenar reverberatory furnaces and charged in the liquid state to 350-lb. capacity electric induction furnaces over which are mounted the dies. A pressure of between 2 and 10 lb. per sq. in. is imposed on the liquid metal to fill the die, after which pressure is cut off and the castings removed from the die with only a runner of about 2 oz. to be removed, even on castings which weigh up to 85lb. The visitors, who were nearly all from iron foundries, were amazed at this yield, but it is one of the factors which indicates the advantage Mr. Lewis and his team have obtained in deciding upon low-pressure die-casting for general work.

Products and Progress

Alumasc are the largest makers of aluminium beer-barrels in the country and make a range of five sizes. The barrels are cast in two halves and welded together, coated inside and turned out as a completed product; together with special dispensing taps, pressure-reducing valves and a beer-cooling unit, they offer a complete service which has fulfilled a big demand from leading brewers. A rectangular cask has now been produced to minimize wasted lorry and shipping space by allowing closer packing of the load.

Much development work of a very specialized nature has been, and is still being, carried out by the company. A nose cone which offered considerable problems in production has been supplied for a ground-to-air projectile and a further very complicated casting produced for the "Seaslug." General Motors Corporation sought the help of Alumasc to develop the manufacture of an aluminium crankcase which is made in two halves and bolted together. Thousands of these engine castings are now produced per week in Messins, USA, under licence from Alumasc. They are used for the 2.4 litre power unit of the new Chevrolet Corvair car which is one of the new American so-called small cars announced quite recently. While the name Alumasc was comparatively unknown in the foundry industry until recently, the fact that General Motors sought their help over the development of this aluminium crankcase is indicative of the reputation which this company is now obtaining for itself all over the world.

The castings seen were of very good appearance and dimensional accuracy, and it was said that this pressure process could almost eliminate troubles from porosity without having to bother about feeders at all.

Mr. J. R. Palmer (foundry manager), Mr. F. W. Grapes (engineering manager), and Mr. S. J. V. Rumble, the production engineer, acted as guides and after a tour of the works, refreshments were served in the excellent canteen building where Mr Lewis was asked a number of questions ranging from the importance of the mould coatings used to dress the dies, to die reconditioning and composition of the variety of alloys melted.

This was an evening visit which was very instructive and proved an "eye opener" for everyone. In the words of Mr. J. T. Stevens, who proposed the vote of thanks to the directors, "To-night I feel like the boy who saw a giraffe for the first time, and declared there is no such animal, castings like these are quite beyond my experience but they are all the more interesting for that." Mr. Lewis replied on behalf of his staff.

* A detailed description of this foundry is to appear in the JOURNAL shortly.

Building Exhibition

Lord John Hope, the Minister of Works, will be present at Olympia on November 18 to officially open this year's Building Exhibition, which is to last until December 2. There will be more exhibitors than ever before—including displays from Africa, Australia, Belgium, Canada, Denmark, Germany, Portugal and Spain. A prominent feature will be various new methods of insulation introduced since the Thermal Insulation (Industrial Buildings) Act of 1957. Stands of particular interest to foundrymen are briefly reviewed below (the figures in brackets being the stand numbers).

ALLIED IRONFOUNDERS, LIMITED (*211-212 Row N, 227-228 Row O, National Hall*), will include in their exhibit the new Agamatic oil-fired boilers, solid-fuel boilers, convector fires, and room heaters. New cookers will also be shown, and baths and basins in suitable settings will be installed on the first floor of the stand.

GRIFFIN & GEORGE (LABORATORY CONSTRUCTION), LIMITED (*629, National Hall Gallery*), will display for the first time the Griffin-Grundy all-metal laboratory furniture, which has improved corrosion resistance, completely rigid construction, and no projecting handles on cupboards and doors.

HATTERSLEY BROTHERS, LIMITED (*232, Row P*), will be displaying their solid-fuel appliances, and gas-fired boilers for domestic central heating and hot-water supply, one of the boilers having an output of 75,000 B.T.U.'s per hr.

WALKER CROSWELLER & COMPANY, LIMITED (*706, First Floor*). Two new thermostatic valves will be on show, and a new economy tap, the Mezurtap, which dispenses exactly one pint of water in about 45 sec. and yet leaves both hands free to wash.

NEWTON CHAMBERS & COMPANY, LIMITED (*205-206*). Two of the latest Redfyre domestic heating appliances will be displayed: the Centramatic 50, which is fully automatic and made specifically to standard kitchen-equipment height, and the No. 5 Bacboiler, which is designed to provide a simple installation for domestic hot water and/or radiators.

THOMAS ROBINSON & SON, LIMITED (*W378/V379, Empire Hall*). Eighteen woodworking machines will be exhibited, including seven entirely new types. The new machines are: a circular-saw bench (Type YA/T), a 7- by 3-in. moulder (Type ED/T) and five machines of the new Cadet range. Also on show will be improved models of the 48-in. Band Re-saw (Type XF/T) and the Pan-L-Saw (Type EU/T).

UNITED STEEL STRUCTURAL COMPANY, LIMITED (*P236, National Hall*). Several models of football grandstands with steel frames of cantilever design will be on show, and the two-storey stand will be an exhibit in itself, being also of cantilever construction.

News in Brief

ARRANGEMENTS have been made between Associated Electrical Industries, Limited, and Alco Products Inc., New York, for joint collaboration in the design, manufacture, and sale of diesel-electric locomotives for world markets.

THE NAME OF A.C.V. Sales, Limited, the selling organization for A.E.C., Limited, Crossley Motors, Limited, and the Maudslay Company, Limited, has been changed to A.E.C. (Sales), Limited. The management will continue unchanged.

SANDHOLME IRON COMPANY, LIMITED, Todmorden, has placed an order with Chatwood and Chantry of Sheffield for a heat-treatment furnace, measuring 16 by 12 by 8 ft., which is to be used for the stress relieving of large cast machine-tool components.

A DEVELOPMENT certificate has been granted to the English Electric Company, Limited, Stafford, by the Board of Trade for extensions to shops making high-precision electrical control equipment. The extensions may involve up to £1,000,000.

Mr. PHILIP DORTE, O.B.E., Midlands controller of Associated Television, Limited, was the guest speaker to the Non-Ferrous Club at the Queen's Hotel, Birmingham last week. A collection, taken during the meeting, on behalf of the Earl Haig Fund yielded £18 2s.

ORDERS FROM companies in Iran, worth nearly £300,000, for the supply of 115 truck chassis have recently been received by Leyland Motors, Limited. During the past ten months, the Leyland group has received contracts worth over £1,500,000 from this country.

THE NAME of Synthetic Carbon & Engineering Company, Limited, Stanmore (Middx), has been changed to Morgan Components, Limited, in order to make clear the association between the Morgan Crucible Company, Limited, and Synthetic Carbon & Engineering Company.

THE 62ND ANNIVERSARY of the establishment of the *Syndicat General des Fondeurs de France* was celebrated on October 22 at a general meeting presided over by Mr. Maurice Olivier. The occasion also celebrated the receipt by the organization of the National Order of the Legion of Honour.

IN HIS REPORT to the Employment Committee this month (November), Mr. J. Corbett, Oldbury employment officer, states that the unemployment figure is at the record low level of 0.6 per cent. Industry in the town is thriving so much that employers are having to recruit labour from other areas.

THE INDIAN GOVERNMENT has announced the procedure for regulating export of manganese-ore during the period September 1959-October 1960. Established shippers, mine-owner exporters and the State Trading Corporation will be given an allotment of quota for a quantity equal to the quota issued to them in 1958-59.

AFTER 21 MEN had been declared redundant, 140 maintenance men at the foundry of Sterling Metals, Limited, at Nuneaton walked out during the afternoon of November 4. The management claim that these men had to be discharged following the completion of certain reorganization. Some 2,000 men are employed in these engineering works.

AEROX, LIMITED, Lister Place, Hillington, Glasgow, S.W.2, announce that as a result of the steadily increasing demand for aeration, filtration, and fluidizing equipment, they have outgrown their premises at Crawley and have now acquired a much larger factory for their engineering section, located at Chalford, Stroud, in Gloucestershire.

LAST MONDAY the three-man delegation of the Scientific Instrument Manufacturers' Association of Great Britain (SIMA) left London Airport for Moscow. The delegation consists of Mr. F. Hamill of Hilger & Watts, Limited, Mr. H. D. Binyon of the Solartron Electronic Group, Limited, and Mr. K. A. Macdonald of Unicam Instruments, Limited.

BRITISH RAILWAYS (MIDLAND REGION) have placed a contract, valued at more than £40,000, with R. H. Neal & Company, Limited, of Grantham, for special three-ton mobile cranes which are to be used in the railway modernization programme. They are designed to operate within the British Railways Grampus wagons, and for unloading concrete railway sleepers.

"CONSIDERABLE IMPROVEMENT" in the trade of the port of the Tees during September was reported by the chairman, Lt.-Col. T. Eustace Smith, at the monthly meeting of the Tees Conservancy Commission. Revenue for 11 months was only £6,400 short of last year's total, with a month to go. Iron-ore imports were up by 100,000 tons, petrol by 19,000 tons, and oil by 29,000 tons.

THE Norsk Hydro's plant at Herøya in Telemark produced 9,300 *tonnes* of magnesium from Norwegian dolomite in 1958, an increase of 300 *tonnes* over the output in 1957. Almost all of the output was exported. According to an official in the Ministry of Industry, the demand for magnesium that led to the construction of the metal plant at Herøya has so far been less than expected.

CONTRACTS FOR 2,500 diesel engines valued at £500,000 have been completed with major European combine harvester manufacturers by the industrial engines department of the Ford Motor Company, Limited. They are the industrialized versions of the company's four-cylinder and six-cylinder engines as used in Thamas Trades trucks which develop 62 b.h.p. and 96 b.h.p., respectively.

A SPECIAL DINNER for long-serving employees of W. H. Allen, Sons & Company, Limited, mechanical, hydraulic, and electrical engineers, of Bedford, on November 4 was attended by 45 men and women with, in the case of the men, 45 years' service, and in the case of the women, 40 years' service. Altogether the company has recently presented 415 gifts to employees with 25 or more years' service.

THE DIESEL-ELECTRIC propulsion machinery for the new 4,000-ton cable ship being built for Cable & Wireless, Limited, has been ordered from the English Electric Company, Limited, by the builders, Cammell Laird & Company (Shipbuilders & Engineers), Limited. Birkenhead. Valued at nearly £250,000, the contract includes propulsion motors, switchgear, control gear, and motors driving the auxiliary machinery. The work is being carried out by the company's marine projects division.

INCREASED ACTIVITY in the foundry department at the Holwell Ironworks at Asfordby Hill, Melton Mowbray, Leicestershire, has led to more men being taken on and there are still vacancies. Only three months ago the firm announced that they would be closing down another blast furnace and might have to discharge about 150 workers. Eventually, however, by transferring men within the Stanton Organization, the company had to discharge only 11 men. It is hoped that there will now be further expansion of activities.

BRITISH RAILWAYS' WORKSHOPS are to build another 390 diesel-train vehicles which the British Transport

News in Brief

Commission have ordered for passenger services in London, Liverpool, Manchester, Leicester, Nottingham, Hull, North Wales, and Scotland. The orders are worth nearly £6,000,000. The railway workshops at Swindon will build 51 of the vehicles, Eastleigh Works (Hants) will build 57, and the other 282 will be constructed by the carriage works at Derby. All these vehicles will be in service within the next two years.

THE 1,000TH DIESEL RAILCAR to be built at the British Railways Carriage and Wagon Works at Derby was launched by Mr. A. E. Bates, works manager, at a ceremony on November 4. After the ceremony, the car carried 40 works employees on a 60-mile outing. The car, the 414th to be produced at the works in aluminium alloy—the others are of steel—has now gone into regular service between Chester and New Brighton. Under the railways' modernization scheme, 4,600 diesel railcars are planned, and of these 3,000 are already operating.

GENERAL SIR REGINALD KERR, general manager of British Waterways, stressed the advantages to industrialists of sending goods to the ports by way of inland waterways when he spoke at the opening of the Waterworks Exhibition in Birmingham on November 3. In referring to the facilities offered to manufacturers, Sir Reginald said that the Waterways had introduced a container of four tons capacity for bulk cargo, which could be loaded straight into barges from despatch bays at canalside premises. The exhibition, the first of its kind to be staged by British Waterways, was opened by the Lord Mayor of Birmingham, Alderman John Lewis.

RUBERY OWEN, LIMITED, Darlaston, are introducing a new scheme "Project 59" designed to develop the initiative of young employees between the ages of 17 and 20. Each employee will be sent away for a week or a month to study a subject of his own choice, and although he will have to undertake this study out of his own resources, his normal wages will be paid to him during his absence. On return to work, each youth will present a report on activities, and the management will consider the result of the study period. In charge of the scheme is the Rubery Owen education officer, Mr. M. S. Milliken, who describes it as an experiment in character training.

Mr. A. MCTURK COOKE, chairman and managing director of William Cooke & Sons (Sheffield), Limited, steelfounders, told employees at their annual dinner on November 7, "The welfare relationship has now become a most vital part in the firm's successes." He added that it was increasingly recognized that happy relationships were a vital part of the country's industries and happy employees contributed a great deal to the success of industry. He presented a cheque to Mr. J. W. Birkinshaw in recognition of his 50 years' service with the company (Mr. Birkinshaw is still at work). Mr. Cooke also presented a silver cup to Mr. Alfred Pearson the work's champion angler.

A SAVING OF £30,000,000 PER ANNUM in foreign currency is expected to eventually result from a 10-year plan, now being drawn up by South African Board of Trade officials, which will enable local factories to manufacture motor-car parts for building into imported vehicles at the country's eight major assembly plants. The programme will call on the assembly plants to incorporate initially some 25 per cent. of locally-produced parts in vehicles; the proportion to be increased as more specialized components become available. It is estimated that within 10 years local industry will be manufacturing between 90 and 95 per cent. of all car parts. The new industry will supply spare parts as well as components for new vehicles.

AT THE ANNUAL MEETING on October 28 of the Birmingham area committee of the National Union of Manufacturers, Mr. Grahame W. Donovan, chairman of the Midland Council of the NUM, warned that the Government might introduce compulsory measures if firms failed to respond to inducements to site industry in areas with high unemployment. He said that a senior official of the Board of Trade had made it plain that the Government might have to take stringent steps if industry insisted on "piling into" the already dense industrial areas. The guest speaker at the luncheon following the meeting was Mr. P. J. Feeney, a member of the Birmingham Stock Exchange, who illustrated how stock exchanges could help the small and medium-sized companies. Details were also announced of a conference to be held in Birmingham to-day (Thursday), in co-operation with the Midland Region of the Federation of British Industries. The principal speaker will be the new President of the Board of Trade, Mr. Reginald Maudling, and the subject will be the European Free Trade Area.

Mr. LEONARD CLEAVER, Conservative M.P. for Yardley (Birmingham), at the annual dinner of the British Bronze and Brass Ingot Manufacturers' Association in London last Saturday said: Bronze is an ancient metal with an historic past and the bronze and brass industry has served the country well for many years. But times change and we are now living in the Sputnik world which challenges the complacency of the past. This is a time when new alloys are required and when new uses must be found for the older types of metal. This naturally involves two things. First, there must be co-operation between supplier and customer in finding new markets for the products of the industry. At the same time, considerable sums must be spent on research without which the industry might wither and die. The free trade area (large or small) presents a challenge to the ingot manufacturers and it is, therefore, essential that the industry should be properly represented and have the appropriate information to present at the vital time to Government Departments. (Mr. Cleaver was previously a partner in Heathcote & Coleman, the firm which acts as the secretariat for the BBBIMA and other foundry associations.)

LARGEST ARC-MELTING FURNACE in Britain has been ordered from Birlec-Efco (Melting), Limited, Birmingham, by the English Steel Corporation, Limited, Sheffield, for use in connection with its scheme for casting in vacuum ingots for forging. With a diameter of 21 ft., the furnace will have a nominal charge capacity of 80 tons. It will be engaged on melting and refining high-grade carbon, alloy, and stainless steels. To be rated at 20,000 kvA., the furnace will be supplied with an AEI transformer equipped with "on-load" tap-changing equipment of the resistor bridging type, arranged for remote electrical control. Cold steel scrap will be used in the furnace, which will be top charged from an overhead bucket suspended by crane. Removable sides plates will be fitted to the frame of the furnace casing, enabling local lining repairs to be effected. A robust frame will support the electrode-raising and roof-swing gear on a chassis entirely independent of the furnace shell. The roof ring will be lifted by a lever system when raising and swinging the roof. The furnace shell will be tilted hydraulically, allowing a forward tilt of 45 deg. for pouring and a backward tilt of 15 deg. for slagging.

Long-service Record

The illustration shows (left) 77-year-old MR. ERNIE CHAPMAN, of Port Clarence, County Durham, who has created a record for long service with the Anderston Foundry Company, Limited, Port Clarence, having served the company for 63 years. "Chappie," as he is known to his workmates, started as a 14-year-old working a 70-hr. week for a few shillings. Over the

years, he became foreman dresser, from which position he retired last August. On Friday, October 30, his workmates gathered at the Royal Hotel, Port Clarence, to pay tribute to him, and he was presented with a chiming clock by MR. D. HOLMES, foundry manager (right), on behalf of his colleagues.

Hepworth & Grandage Changes

Hepworth & Grandage, Limited, of Bradford and Yeadon, Yorkshire, founders and manufacturers of the Hepolite engine-components and gas-turbine blades, announce several senior staff changes intended to strengthen the company's position on the production side of their operation. Mr. T. L. Booth, previously director and general manager of Hepworth & Grandage (Yeadon) Limited, has been appointed to the board of the Hepworth & Grandage, Limited, parent company and will take up responsibility at their main St. John's factory at Bradford for jig and tool drawing office, planning, work-study, tool-room and machine-tool repair departments. Mr. Booth joined Hepworth & Grandage, Limited, in February, 1951, having already had a very wide experience in all branches of engineering. He has been notably successful in building up production of gas-turbine blades at the Yeadon factory, and his new appointment will reinforce the parent company's position at Bradford. Mr. Booth remains on the board of Hepworth & Grandage (Yeadon) Limited.

Mr. H. Forest, director and works general manager of the Hepworth & Grandage main factory at Bradford, has been appointed to the board of Hepworth & Grandage (Yeadon) Limited, and the general managership of the Yeadon factory, previously the responsibility of Mr. Booth, will now be taken over by Mr. A. Rowntree, who will be assisted by Mr. E. Boyes. Both Mr. Rowntree and Mr. Boyes began their careers at the Bradford factory and were later transferred to Yeadon.

IVE Competitions

The Institute of Vitreous Enamellers have announced their Whittle Foundation Competition. This competition is primarily intended for junior staff in the enamelling industry, *i.e.*, of 30 years of age or under. However, where a competitor has been away on National Service, or away from the industry on war service of any kind, and this is stated in a covering letter, the time of such service will be subtracted from his actual age and taken into consideration by the assessors. The papers for the competition should be from 3,000 to 5,000 words with any necessary illustrations and must, of course, be written entirely by the competitor, although any experimental work done by others can be referred to with due acknowledgment. Care must be taken to see that any information given in the paper is not confidential, and competitors are advised to submit their papers to their company for approval before sending them in for consideration. The subject can be of the entrant's own choice, but the following title is suggested for the present competition: "The Future of the Institute in the Enamelling Industry." The Whittle prize will be in the form of a medal, and will carry with it a further prize of a visit to a Continental enamelling plant. Competitors for the A. Biddulph award, which is made for the best critical assessment for the Annual School, held from October 9 to 11, are reminded that the closing date for entries is December 1.

BSCRA Council Elections

Dr. Robert Hunter, deputy managing director of the Clyde Alloy Steel Company, Limited, was recently elected chairman of the Council of the British Steel Castings Research Association. Mr. W. S. Scott, a director of Darlington Forge, Limited, has succeeded Dr. Hunter as vice-chairman of the Council.

The retirement of Mr. C. H. Kain, managing director of Lake & Elliot, Limited, and the National Steel Foundry (1914), Limited, who was chairman of the Council for over five years, was marked by the presentation, by the Association's staff, of a stainless-steel gavel, designed and made at the BISRA research station. This gavel comprises a scale model of a handshank, the anvil being formed of an etched section of a clover-leaf test-piece—an acknowledgement of Mr. Kain's invention of this design of test-piece. A tribute to the work of the retiring chairman was paid by Dr. A. H. Sully, director of research, BSCRA, who said that the erection of the research station and the expansion now in progress would be a lasting testimony to Mr. Kain's chairmanship.

Record-breaking Foundryman

As will be known from the national Press, 23-year-old Marine Peter Degnan R.M.F.V.R., a Territorial who lives at Tooting Bec, London, S.W.17, carried out a 110-mile march in 36 hours 17 minutes from Poole, Dorset to Charing Cross where he arrived last Saturday night. This achievement beat a previous record held by an American army officer. It is of interest to note that marine Degnan is a foundryman employed by the Eyre Smelting Company, Limited, at their Tandem Works, Merton Abbey, London, where he works in the continuous-casting bronze shop. So long as there are young men of this stamp in the country, there can surely be nothing wrong with the youth of Britain and all founders will join in offering heartiest congratulations on this magnificent achievement.

Company News

WESTINGHOUSE BRAKE & SIGNAL COMPANY, LIMITED—The company has acquired for cash all the share capital of Heatly & Gresham, Limited, engineers' agents, of London, S.W.1.

E. BOYDELL & COMPANY, LIMITED, manufacturers of loaders, dumpers, and shunters, etc., of Manchester—All the company's capital has been acquired by Winget, Limited, the Rochester (Kent) manufacturers of contractors' plant, etc., for £630,000 cash.

CHARLES ROBERTS & COMPANY, LIMITED, manufacturers of rail and road vehicles, wheels, axles, and springs, etc., of Horbury Junction, near Wakefield (Yorks)—The directors deny rumours of plans for hiving-off the company's hire-purchase interests.

ROBERT HUDSON, LIMITED, light railway-equipment manufacturers, etc., of Leeds—Final dividend of 8¼ per cent. makes 16¾ (15) per cent. for the year ended June 30, 1959. Group net profits declined to £279,660 (£311,054) after tax of £219,500 (£314,500).

NEEPSEND STEEL & TOOL CORPORATION, LIMITED—The depression of the late autumn of last year and early spring of this year has now receded, says the president, Sir Stuart Goodwin. Practically all the company's firms are on full time with prospects of being exceedingly busy for a period ahead.

TUBE INVESTMENTS, LIMITED—The dividend is being raised to 20 (17½) per cent. on the increased £16,805,974 capital for the year to July 31, 1959, with a final of 12½ (10) per cent. Group trading profits advanced to £16,782,643 (£16,104,804), and after tax of £6,152,202 (£7,032,394), the net profit is up at £6,458,460 (£6,003,420).

CANNON HOLDINGS, LIMITED, manufacturers of domestic gas appliances and chemical plant, etc., of Bilston (Staffs)—A final dividend of 15 per cent. makes a 20 (15) per cent. total for the year ended June 30, 1959. Group trading profits rose to £142,476 (£88,456), and after tax of £78,841 (£55,865), the net profit is £63,635 (£32,591).

SIDNEY FLAVEL & COMPANY, LIMITED, manufacturers of gas appliances, of Leamington Spa (Warwickshire)—The 7½ per cent. dividend is doubled for the year to July 31, 1959. No payment was made for 1956-57. Consolidated trading profits rose to £311,016 (£242,809), tax absorbs £101,415 (£89,893), and the net profit is £84,468 (£54,820).

INTERNATIONAL NICKEL COMPANY OF CANADA, LIMITED — The company is maintaining the fourth-quarter dividend at 65 cents, which, with an extra year-end dividend of 40 cents, makes a total of $3 for 1959. Both are payable on December 21. This compares with $2.60 last year, when the payment had been reduced from $3.75. Net earnings in 1958 were $39,700,000, against $86,100,000, and were equal to $2.71 ($5.90) per common stock.

BIRMID INDUSTRIES, LIMITED, manufacturers of components for motor-car engines, iron, steel, and light alloy castings, etc., of Smethwick (Staffs)—As well as raising the dividend from 17½ per cent. to 20 per cent. for the year ended July 31, 1959, the directors propose to pay an interim next May provided earnings remain satisfactory. Group profits rose to £2,129,465 (£1,953,080), tax takes £1,051,527 (£963,349), and the net profit is £1,077,938 (£989,731).

HERBERT MORRIS, LIMITED, manufacturers of lifting and transporting machinery, of Loughborough (Leics)—The company announces a one-for-one scrip issue to holders registered November 10. The 25 per cent., tax free, distribution is maintained for the year ended July 31, 1959, on capital increased through the acquisition of British Monorail, Limited. The final dividend is 15 per cent. and the bonus is 5 per cent. Group profit decreased to £842,951 (£1,099,205), and tax of £409,943 (£557,180) leaves £437,653 (£554,926).

H. J. BALDWIN & COMPANY, LIMITED, manufacturers of cable covers and electrical components, of Nottingham—Group turnover of the company, which is now controlled by Hartley Baird, Limited, has recently shown a growth towards a level much in excess of any previous year, states the chairman, Mr. H. J. D. L. Walmsley. He believes this will further increase and should result in a marked improvement in group profitability, but it is emphasized that this will not apply to the first five months or so of the current year.

CROMPTON PARKINSON, LIMITED, manufacturing electrical engineers, of Guiseley (Yorks)—It is proposed to capitalize £1,451,506 in a one-for-four scrip issue to holders of December 15. The issue does not imply any further change in the total amount to be distributed by way of ordinary dividends. Total dividend is being raised to 14 (12) per cent. for the year ended June 30, 1959, with an increased final of 9 per cent. Group profit rose to £2,755,691 (£2,687,577), and after tax of £1,442,096 (£1,527,380), the net profit is £1,253,021 (£1,112,429).

Final dividend of SAMUEL OSBORN & COMPANY, LIMITED, steel and tool makers, etc., of Sheffield, is raised from 12½ per cent. to 20 per cent., making a total of 27½ per cent. for the year ended July 31, 1959, against 20 per cent. previously. Subject to audit, the group manufacturing and trading profit contracted from £1,275,680 to £1,093,947, the balance being struck after charging £387,521 (£401,933) for depreciation, directors' remuneration, etc., which includes a provision of £54,116 (£49,484) against possible loss of investment in an overseas subsidiary. Net profit of £535,360 compares with £661,639, and after minority interests, the net balance is £130,297 lower at £527,738.

Metal Closures/John Dale

Offer by Metal Closures, Limited, West Bromwich (Staffs), for the ordinary and fully-paid 6 per cent. convertible unsecured loan stock of John Dale, Limited, makers of non-ferrous collapsible tubes, aluminium and light-alloy castings, etc., of London, N.11, has been accepted by holders of more than 94 per cent. of the ordinary and 99 per cent. of the loan stock and therefore becomes unconditional.

The offer by Philip Hill Higginson Erlanger, Limited, to purchase for cash the ordinary shares and loan stock of John Dale has also become unconditional. It is expected that allotment letters in respect of the new Metal Closures ordinary shares will be posted on November 14 and that dealings will start on November 16. As foreshadowed in the merger proposals both companies have declared interim dividends of 11 per cent. to holders at November 4. Metal Closures has also foreshadowed a final of 11 per cent.

Mr. R. E. Carr has resigned from the board of John Dale and is to become the company's first president. Mr. L. R. Carr, chairman, Mr. P. J. A. Lachelin, deputy chairman, and Mr. W. E. H. Jones, managing director, have joined the board of Metal Closures and Mr. Carr has been appointed its deputy chairman. The chairman of Metal Closures, Mr. K. D. Erskine, the managing director, Mr. W. R. Gamble, and Mr. S. E. Clotworthy, have joined the board of John Dale.

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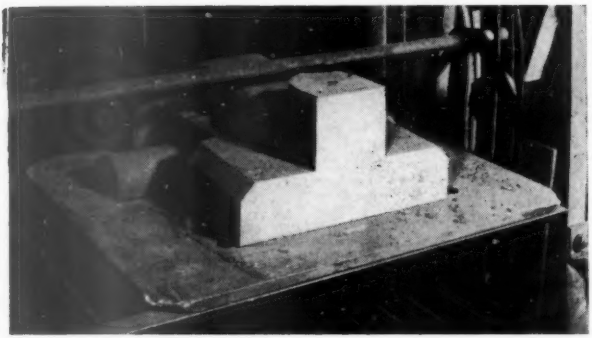

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Raw Material Markets

Iron and Steel

The demand for pig-iron continues to increase, and present deliveries in all grades are higher than they have been for some time past. The chief call is for the low-phosphorus irons to meet the needs of the engineering and speciality foundries, which maintain a high level of outputs of high-duty castings for many trades. Of these foundries those catering for the motor vehicle trade are very busy. Many other users of high-quality castings are also specifying for appreciable quantities, these including heavy engineering, power and electrical plant manufacturers, the agricultural machinery trade, and the steelworks. The machine-tool trade is also calling for increased quantities of castings, but not to the extent of previous levels, and from collieries and railways demands remain moderate.

These foundries have, until recently, been able to obtain without difficulty the pig-irons they require to implement the work on hand and also to provide an adequate working stock. In the low-phosphorus irons, however, some brands are now more difficult to obtain, as the heavier demand has liquidated stocks at both the foundries and the furnaces and production is fully absorbed by the orders on hand. There is a bigger demand for hematite pig-iron, and refined iron makers are also busier.

Producers of the high-phosphorus pig-irons have been able to dispose of larger tonnages recently on account of the improved demands from the light-casting trade, together with the consignments they have shipped to buyers overseas. Supplies of this grade of pig-iron are still plentiful from current outputs and fairly appreciable tonnages are held in stock by the furnaces. Some of the light foundries maintain the larger outputs, but there is still plenty of room for improvement, while the textile foundries continue only moderately employed. Deliveries of basic pig-iron, which have been stepped up recently to the steelworks, are coming forward in adequate quantities both for consumption and stock requirements.

The foundries are able to cover for their requirements of scrap. Arisings are sufficient to satisfy present needs, although demands are strong for the best quality cast-iron scrap. Foundry coke deliveries are satisfactory. All requirements of ganister, limestone, and firebricks are met promptly.

The call for steel semis from the re-rollers continues to expand and home steelworks have difficulty in fulfilling all the demands made upon them, particularly those calling for early delivery. Most of the steelworks are fully booked for their outputs until at least the end of the year. The re-rollers are able to maintain good outputs for all of their products, and there is a brisk demand for small bars and light sections, while the call for reinforcing rods is heavy. All arisings of suitable re-rolling defectives and crops are taken up quickly.

Non-ferrous Metals

The US copper situation has now reached the position where something ridiculous may well happen to the price structure. Either it will go through the roof or, like the custom smelters, become unquoted, compelling thereby potential consumers to find metal where they can at fantastic prices. Indeed, there are still no signs of a settlement and the strike has now encompassed the White Pine Copper Company, while, to add fuel to the consumers' fire, an explosion at American Metal Climax last week will mean the loss of a further 1,000 tons a week for up to two months. The present position is that actual supplies are now very hard to find, whereas before they could be had at around 40 cents a pound.

As mentioned above, there is no custom smelter quotation and following the fabricators' move of raising the prices of their products to a basis of 33 cents a pound, Anaconda has actually made the move and raised its quotation by 1½ cents to 33 cents a pound. Other producers are still quoting 31½ cents a pound, but they are expected to bring their prices in line with Anaconda. Yet, with little or no metal available, the price structure is meaningless.

The Chilean copper industry is again at work, but a short-lived dispute by the timbermen at Mufulira on the Copperbelt last week shows that racial disturbances on the Copperbelt are *sub-rosa* rather than dead. Disturbances in the Belgian Congo continue to mar the horizon. London, however, is a very viable market. Demand is good and is coming in from all quarters of the globe. The price has followed a hesitant course, but the trend is still upwards and with the present strike position remaining the outlook is for further gains to be recorded. At the close of business on Monday, in fact, the cash quotation was, at £265 a ton, the highest closing level so far this year. The price since then has appreciated further. The return to work of the US steelman by virtue of the US Supreme Court upholding the court injunction is taken as a bullish point, while closer to home the rapid dwindling of stocks available in LME warehouses is exerting a powerful pressure on consumers. Last week stocks fell by as much as 1,050 tons, leaving the total available at the end of last week at 6,807 tons.

Tin has been a brisk market in London, with the price held reasonably steady by sales from the buffer stock. In fact, on Friday the turnover in tin reached 840 tons, one of the highest figures recorded for several years. On Tuesday, the cash quotation moved up £4 to £798 10s., a price which was held yesterday (Wednesday). Evidence of the buffer stock manager at work is seen in the fall in stocks in LME warehouses last week by 91 tons, leaving a total of 7,580 tons available. In the US the market is flat and it remains to be seen how quickly it will pick up following the resumption of work in the steel industry. The US price is shaky at fractionally above $1.01 a pound.

Zinc has been a relatively quiet market in London, mainly due to the easing of nearby supplies. The price of cash metal, however, has been firm this week. In the US the market is featureless owing to the steel strike, and the attempt to raise the quotation last week failed, so that suppliers are now quoting 12½ cents a pound.

Lead came into prominence last week and with supplies scarcer than they have been for many a month the price went ahead to around £74 a ton. There has been a fall of about £2 this week, however. Unless the supply position becomes much tighter the outlook would still seem for the price to sink back gracefully to around its former floor level of £70 a ton.

TO MEET THE DEMAND for oil-fired boilers for homes, due partly to the requirements of the Clean Air Act, Newton, Chambers & Company, Limited, near Sheffield, are to build a workshop 200-ft. long by 50-ft. wide, for the assembling, packing and despatch of boilers at their Thorncliffe works. Provision will be made for a later extension to deal with the increased demand which is anticipated for this type of equipment. Further news from this company is that employees saved a total of £11,615 during the month of October—over £1,000 more than in the same month last year.

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Current Prices of Iron, Steel, and Non-ferrous Metals

(Delivered unless otherwise stated)

November 11, 1959

PIG-IRON

Foundry Iron.—No. 3 IRON, CLASS 2, 10-ton lots or over: Middlesbrough, £21 6s. 0d.; Birmingham, £20 18s. 3d.

Low-phosphorus Iron.—Over 0.10 to 0.40 per cent. P, 10-ton lots or over, £23 5s. 0d., delivered Birmingham, £23 10s. 0d., delivered Grangemouth.

Cylinder and Refined Irons.—North Zone, £25 6s. 6d.; South Zone, £25 9s. 0d.

Refined Malleable.—P, 0.10 per cent. max.: North Zone, £26 6s. 6d.; South Zone, £26 9s. 0d.

Hematite.—Si up to 2 per cent., S. & P. over 0.03 to 0.05 per cent., 10-ton lots or over: N.-E. of England (local iron), £24 14s. 0d.; Scotland (Scotch iron), Zone S.1, £25 0s. 6d.; Sheffield, £26 2s. 6d.; Birmingham, £26 9s. 0d.; Wales (Welsh iron), £24 14s. 0d.

Basic Pig-iron.—£20 3s. 0d., delivered Staffs, Derbyshire, Notts, Lincs, Rutland, Northants, and Leicestershire in 10-ton lots or over.

FERRO-ALLOYS

(Per ton unless otherwise stated, delivered)

Ferro-silicon (6-ton lots and over).—45 per cent. Si, £40 0s. 0d. to £42 10s. 0d., scale 15s. 0d. per unit, lumpy; 75 per cent. Si, £54 0s. 0d. to £57 10s. 0d., scale 15s. 0d. per unit, lumpy.

Ferro-vanadium.—50/60 per cent., 22s. 6d. per lb. of V.

Ferro-molybdenum.—65/70 per cent., carbon-free, 12s. 10d. per lb. of Mo.

Ferro-titanium.—20/25 per cent., 2-3 per cent. Cu, £250 0s. 0d.; 38/40 per cent., commercially carbon-free, £287 0s. 0d.

Ferro-tungsten.—80/85 per cent., 10s. 3d. per lb. of W.

Tungsten Metal Powder.—98/99 per cent., 13s. 3d. per lb. of W.

Ferro-chrome (6-ton lots and over, lumpy).—4/6 per cent. C, £77 0s. 0d. to £81 0s. 0d., basis 60 per cent. Cr, scale 26s. 0d. to 27s. 6d. per unit; over 6 per cent. C, £74 10s. 0d. to £77 10s. 0d., basis 60 per cent. Cr, scale 26s. 0d. to 27s. 6d. per unit; 2 per cent. C,* 1s. 7½d. to 1s. 10½d. per lb. Cr; 1 per cent, C,* 1s. 8d. to 1s. 11d. per lb. Cr; 0.15 per cent. C,* 1s. 9d. to 2s. 0d. per lb. Cr; 0.10 per cent. C,* 1s. 9½d. to 2s. 0½d. per lb. Cr; 0.06 per cent. C,* 1s. 9¾d. to 2s. 0¼d. per lb. Cr.

Metallic Chromium.—98/99 per cent., 6s. 10d. per lb.

Metallic Manganese.—94/96 per cent., carbon-free, £245 0s. 0d.; 96/98 per cent., £275 0s. 0d.

Ferro-columbium.—65/67 per cent., Cb + Ta, 19s. 9d. per lb., Cb + Ta.

Ferro-manganese (Standard).—78 per cent., £63 10s. 0d.

SEMI-FINISHED STEEL

Re-rolling Billets, Blooms, and Slabs.—BASIC: Soft u.t., 100 tons & over, £31 15s. 6d.; tested, 0.08 to 0.33 per cent. C, 6 to 35 tons, £33 15s. 6d.; hard (0.41 to 0.60 per cent. C), under 10 tons, £34 17s. 0d.; silico-manganese, under 10 tons, £43 16s. 6d.; free-cutting, under 10 tons, £36 14s. 6d. SIEMENS MARTIN ACID (under 10 tons): Up to 0.25 per cent. C, £41 1s. 0d.; silico-manganese, £44 4s. 0d.

Billets, Blooms, and Slabs for Forging and for Stamping (under 10 tons).—Basic, soft, up to 0.33 per cent. C, £38 10s. 0d.; basic, hard, over 0.41 up to 0.60 per cent. C, £39 12s. 6d.; acid, up to 0.25 per cent. C, £43 4s. 0d.

FINISHED STEEL

Heavy Plates and Sections (under 10 tons).—Ship plates, (N.-E. Coast), £42 2s. 0d.; boiler plates (N.-E. Coast), £44 12s. 0d.; floor plates (N.-E. Coast), £43 11s. 0d.; angles (N.-E. Coast), £39 16s. 6d.; joists (N.-E. Coast), £39 12s. 6d.

Small Bars, Sheets, etc.—Rounds and squares, under 3 in., and flats 5 in. wide and under, untested soft basic, 50 tons and over, £39 1s. 0d.; under 10 tons to 4 tons, £40 18s. 0d.; under 4 tons to 2 tons, £41 3s. 0d.; hoop and strip, coils, 100 tons and over, £38 0s. 0d.; uncoated strip mill coils, hot rolled, under 3 mm. to 12g., 25 tons to under 50 tons, £43 16s. 0d.; black sheets (hand mill), 24g., 10 tons and over, £57 14s. 6d.; galvanized corrugated sheets, 24g., 10 tons and over, £67 11s. 0d.

Alloy Steel Bars.—1 in. dia. and up; Nickel, £68 10s. 0d.; nickel-chrome, £99 4s. 0d.; nickel-chrome-molybdenum, £111 17s. 0d., in lots of 5 tons to under 10 tons.

NON-FERROUS METALS

Copper.—Cash, £266 0s. 0d. to £266 10s. 0d.; three months, £251 0s. 0d. to £251 10s. 0d.; settlement, £266 10s. 0d.

Copper Tubes, etc.—Solid-drawn tubes, 2s. 6½d. per lb.; rods, 281s. 0d. per cwt. basis; 20 s.w.g., 316s. 0d. per cwt.

Tin.—Cash, £798 10s. 0d. to £799 0s. 0d.; three months, £798 10s. 0d. to £799 0s. 0d.; settlement, £799 0s. 0d.

Lead (Refined Pig).—First half November, £72 2s. 6d. to £72 7s. 6d.; first half February, £72 5s. 0d. to £72 7s. 6d.

Zinc.—First half November, £96 5s. 0d. to £96 10s. 0d.; first half February, £90 10s. 0d. to £90 12s. 6d.

Zinc Sheets, etc.—Sheets, 15g. and thicker, all English destinations, £131 10s. 0d.; rolled zinc (boiler plates), all English destinations, £129 5s. 0d.; zinc oxide (Red Seal), d/d buyers' premises, £109 10s. 0d.

Brass Tubes, etc.—Solid-drawn tubes, 2s. 1d. per lb.; sheets to 10 w.g., 222s. 0d. per cwt.; wire, 2s. 10½d.; rolled metal, 222s. 0d. per cwt.

Brass (Brazing).—BS1400, B3, £171; B6, £227.

Brass (High Tensile).—BS1400, HTB1, £208; HTB2, £220; HTB3, £233.

Gunmetal.—BS1400, LG2, £215; LG3, £225; G1, 1/2%, £280; G1, 1%, £267.

Phosphor Bronze.—BS1400, PB1 (AID released), £318; BS1400, 90/10/1, £298.

Leaded Phosphor Bronze.—BS1400, LPB1, £234.

Phosphor Bronze Strip, etc.—Strip, 314s. 9d. per cwt.; wire, 4s. 3¾d. per lb.; rods, 3s. 6¾d.; tubes, 3s. 6¾d.; chill cast bars; solids 3s. 6¼d.; cored 3s. 7¼d. (CHARLES CLIFFORD, LIMITED.)

Nickel Silver, etc.—Rolled metal, 3 in. to 9 in. wide × 0.056, 4s. 0¼d. per lb.; round wire, 10g. in coils (10 per cent.), 4s. 5¾d.; special quality turning rod, 10 per cent., ½ in. dia., in straight lengths, 4s. 4¼d. All prices are net.

Other Metals.—Magnesium, ingots, 2s. 0d. to 2s. 3d. per lb. Antimony, English, 99 per cent., £190 0s. 0d. Quicksilver, ex-warehouse, £72 0s. 0d. Nickel, £600 0s. 0d. Aluminium, ingots, £180 0s. 0d.; aluminium bronze (BS1400), AB1, £258; AB2, £268.

* Average 68-70 per cent.

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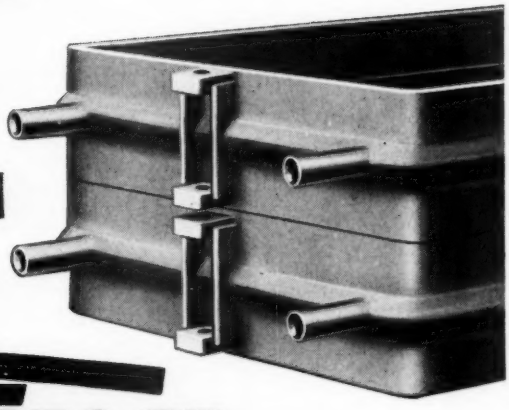

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ISI Translations

From amongst the most recently published lists of translations available from the Iron & Steel Institute (4, Grosvenor Gardens, London, S.W.1), the following have been selected as being of interest to founders. The price quoted is that for single copies, postage extra, there being reductions for quantities ordered. Readers writing for translations, or for further information, should mention this JOURNAL when doing so.

945 MANUFACTURE OF STEEL IN THE ARC FURNACE. Colin, J. *L'Aciérie Electrique*, 1957 (Cahiers du Cessid) (2), Pt. 4, 1-80. (£14.) A comprehensive review of steelmaking in arc furnaces is presented. The general principles are first reviewed and then considered in detail. Charging is first discussed and the importance of the preparation of the change and its compaction are explained. Melting and dephosphorization are next described and the influence of Mn is stressed. Deoxidation, the formation of inclusions, gas evolution and desulphurization are discussed. Steelmaking in basic and acid furnaces is reviewed. Refractory linings for arc furnaces are considered. The organization of an electric steelmaking plant is discussed. (Abstract *JISI*, 1958, Oct., p. 213c.)

1402 CONSTRUCTION AND OPERATION OF A STATIC FREQUENCY TREBLER FOR HEATING AND MELTING METAL. Seulen, G. W. Z. *Metallk.*, 1959, May, pp. 299-306. (£4.) Use of mains and medium frequency for electric heating—frequency conversion—construction and operation of static frequency multipliers—industrial applications. (Author's summary.)

1450 TREATMENT OF SPENT PICKLING SOLUTIONS AND WASTE WATERS IN THE IRON AND STEEL INDUSTRY USING ION-EXCHANGE MEMBRANES. Quitmann, H. *Draht*, 1959, May, pp. 225-229. (£4 5s.) The development of an electrolytic membrane cell for the recovery of H_2SO_4 and conversion of iron salts to hydroxide sludge is described. Complete purification is secured with a conventional exchange-process tower plant for effluent treatment. Costs are indicated. (Abstract preprinted from *JISI*.)

1459 METHOD OF EVALUATION AND SOURCES OF ERROR IN QUANTITATIVE PHOTOELECTRIC SPECTRAL ANALYSIS. Diebel, H. *Arch. Eisenhüt.*, 1958 (5), pp. 275-281. (£5 5s.) Measurement and evaluation in photoelectric spectral analysis. Consideration of the weakening of the internal standard line in high-alloy metals (I.S. element correction). Approximation method. Method of determining the I.S. element correction. Measurement of the standard element content in the zero position (reflected beam). Conduct of the analysis. Third partner effect in vaporization, excitation and optical separation. Multiplicative and additive errors. Incidental errors due to optical and electronic causes. Automation of plotting and evaluation. (Author's summary.)

Translations in course of preparation include:—

1458 DIGEST ON SAMPLING AND DETERMINATION OF HYDROGEN IN STEEL. Stetter, A. *Stahl u. Eisen*, 1959, July 23, pp. 1087-1090.

1461 EQUILIBRIA OF CARBON AND OXYGEN IN LIQUID IRON AND THE EFFECT OF LOW SILICON CONTENTS UPON THESE EQUILIBRIA. Schenck, H., and K. H. Gerdom. *Arch. Eisenhüt.*, 1959, Aug., pp. 451-460.

1462 EQUILIBRIA BETWEEN IRON AND LIME CONTAINING PHOSPHATE SLAGS. Tromel, G., and H. W. Fritze. *Arch. Eisenhüt.*, 1959, Aug., pp. 461-472.

1463 DEVELOPMENT AND APPLICATION OF A RADIATION MEASURING INSTRUMENT FOR THE ANALYTICAL EVALUATION OF TEMPERATURE CONDITIONS (CLIMATE). Ploger, U. *Arch. Eisenhüt.*, 1959, Aug., pp. 473-476.

1472 CONTRIBUTION TO THE HEAT-TREATMENT OF AUSTENITIC MANGANESE STEELS. Fremunt, P., and A. Lorenc. *Slevárenství* (Prague), 1959, Aug., pp. 309-316.

1474 REACTIVITY OF VARIOUS COKES. Kuntscher, W., *et al. Neue Hütte*, 1959, Oct., pp. 6-10.

1477 HYDRODYNAMICS OF MOLTEN STEEL AT TEEMING OR TAPPING, II. Koike, Y. *Tetsu to Hagane*, 1958, Mar., pp. 260-262. (Abstr. *JISI*, 1959, Aug., p. 389c.)

1478 EVALUATION OF THE USEFUL LIVES OF COLD ROLLS. Funke, P., sen., and P. Funke, jun. *Stahl u. Eisen*, 1959, Oct. 1, pp. 1412-1419.

The following translations are in course of preparation by Mr. H. Brutcher, Technical Translations, P.O.B. 157, Altadena, California, USA.

HB 4698 PROTECTION FROM RADIOACTIVE RADIATION IN METALLURGICAL PLANTS. Kuba, J. *Hutnické Listy*, 1959 (7), pp. 583-588.

HB 4687 SPHEROIDIZATION OF GRAPHITE IN MALLEABLE IRON. Galemina, O. M. *Nauch. Dok. Vyssh. Shkol., Met.*, 1959 (1), 168-169.

HB 4713 CHANGE OF GRAPHITE IN CAST IRON WHEN SATURATED WITH MAGNESIUM. Tavadze, F. N., and M. A. Essen. *Lit. Proizv.*, 1959, June, pp. 15-18.

HB 4651 INCLUSIONS (BLACK SPOTS) IN MAGNESIUM-TREATED CAST IRON AND WAYS OF SUPPRESSING THEM. Koroley, V. M. *Liteinoe Proizv*, 1959, May, No. 5, pp. 17-18. $4.90.

HB 4666 PATTERNS OF OXIDE SKINS ON LIQUID CAST IRON. Madono, S. *Giesserei*, 1959, Vol. 44, No. 24, pp. 714-18. $4.80.

HB 4738 EFFECT OF ALUMINIUM, SILICON, AND CHROMIUM ON PRIMARY STRUCTURE OF LOW-CARBON STEEL. Moldavskii, O. D., and A. P. Pronov. *Izv. Akad. Nauk. SSSR. Otn. Met. i Topl.*, 1959, No. 2, pp. 40-42. ($2.90.)

HB 4753 USE OF VIBRATIONS DURING SOLIDIFICATION (OF ALLOYS) TO ELIMINATE HOT TEARS. Novikov, I. I., *et al. Liteinoe Proizv.*, 1958, Jan., No. 1, pp. 7-8. ($3.75.)

HB 4675 KINETICS OF LADLE DEGASSING IN THE VACUUM TREATMENT OF MOLTEN STEEL. Sokolov, G. A., and G. N. Oiks. *Izv. Vuz. Chern. Met.*, 1959, Jan., No. 1, pp. 47-58. ($13.85.)

HB 4469 ELECTROLYTIC POLISHING OF MICROSECTIONS OF STEEL AND CAST IRON IN A PHOSPHORIC-CHROMIC ACID ELECTROLYTE. Zaitseva, L. P. *Zavods Lab.*, 1955, Vol. 21, No. 4, pp. 443-7. ($5.75.)

HB 4365 TECHNOLOGY OF VACUUM MELTING OF METALS AND ALLOYS. PRACTICAL USE OF VACUUM FURNACE FOR REFRACTORY METALS. Emyashev, A. V. *Primenenie Vakuuma v Metallurgii* (Use of Vacuum in Metallurgy), Moscow, 1958, pp. 54-61. ($6.75.)

HB 4633 CASTING WITH SAND MOULDS PRODUCED UNDER HIGH PRESSURE. Krivosheev, V. M. *Liteinoe Proizv.*, 1959 (5), pp. 15-16. Shortened translation in *Engineers' Digest*, 1959 (7), pp. 280-281.

The initials INSDOC, etc., stand for the organization to which enquiries for the following translations should be made, quoting the reference numbers. Enquiries should *not* be addressed to the Institute.

INSDOC: T-2251 THE LOW-BLAST FURNACE. Cotel, T. *Acta Tech. Acad. Sci. Hung*, 1953, Vol. 7, Nos. 3-4, pp. 413-423.

OTS 59-13317 METHODOLOGY OF SELECTING DUST-SAMPLES FROM THE AIR WITH PARTICLE SIZES OF LESS THAN FIVE MICRONS FOR LABORATORY AND EXPERIMENTAL INVESTIGATION. Smetanin, N. I. JPRS: L-693-N. *Giaiyena Truda i Professional'nyye Zabolevaniya* (USSR), 1958, Vol. 2, No. 2, pp. 52-54. ($0.50.)

SLA 59-15638 SAMPLING OF WHITE-METAL SCRAP AND RESIDUES WITH SPECIAL REGARD TO AMERICAN PRACTICE. Thews, R. *Chemisch-Metallurgische Zeitschrift: die, Metallbörse* (Germany), 1931, Vol. 21, Nos. 29, 31 and 33, pp. 675-76, 723-24, and 771-72. (mi. $2.40, ph. $3.30.)

HB 4736 EFFECT OF MOLYBDENUM, CHROMIUM AND ALUMINIUM ON (TRANSVERSE) STRENGTH OF HARD METALS BONDED WITH NICKEL OR COBALT. Baranov, A. I., *et al. Izv. Akad. Nauk. SSSR, Otn.* Met. i Topl., 1959, No. 2, pp. 43-47. ($4.85.)

HB 4272 CENTRIFUGAL CASTING OF DOUBLE-FLANGE CAST-IRON PIPE. Levin, M. M., and V. M. Krapukhin. *Liteinoe Proizv*, 1957, June, No. 6, pp. 1-4. ($6.35.)

BCIRA 909 EFFECTS OF MELT TREATMENTS ON CASTING ALLOYS. Löhberg, K. *23rd International Foundry Congress, Düsseldorf*, 1956. Preprint No. 123, pp. 1-7.

BSCRA 908 PRODUCTION PLANNING IN THE FOUNDRY. Hohmann, E. A. *Giesserei-Praxis*, 1957, Vol. 75, May 10, pp. 192-201.

Symbols for sources of translations:—

INSDOC: Indian National Scientific Documentation Centre, New Delhi, 12, India. OTS: Office of Technical Services, Department of Commerce, Washington 25, D.C., USA. SLA: SLA Translation Centre, The John Crerar Library, 86, East Randolph Street, Chicago, 1, Illinois, USA. HB: Henry Brutcher, P.O. Box 157, Altadena, California, USA. BCIRA: British Cast Iron Research Association, Alvechurch, Birmingham. British Steel Castings Research Association, East Bank Road, Sheffield, 2.

Obituary

Four years after his retirement as chief engineer of John Lysaght's Scunthorpe Works, Limited, the death took place on October 30 of Mr. JAMES ALFRED PEACOCK. He joined John Lysaght, Limited, in 1922, and subsequently was appointed a local director in 1951 and a member of the board the following year, remaining a director until his death. He was 69. Mr. Peacock was a member of the engineering committee of the Iron and Steel Institute and served for three years on the civil engineering committee of the British Iron and Steel Research Association.